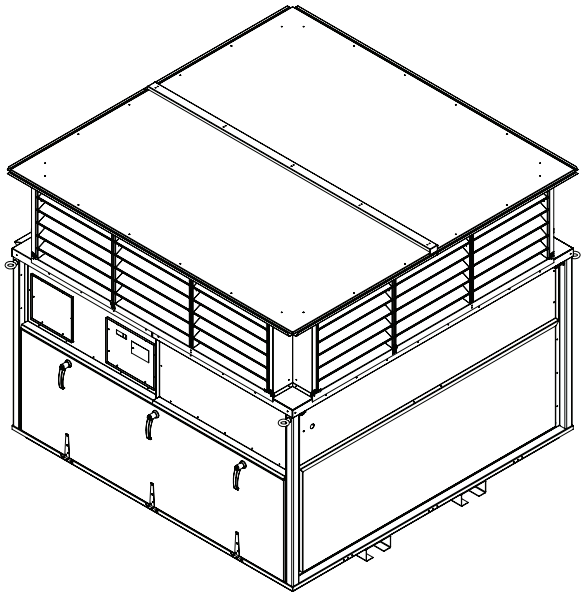
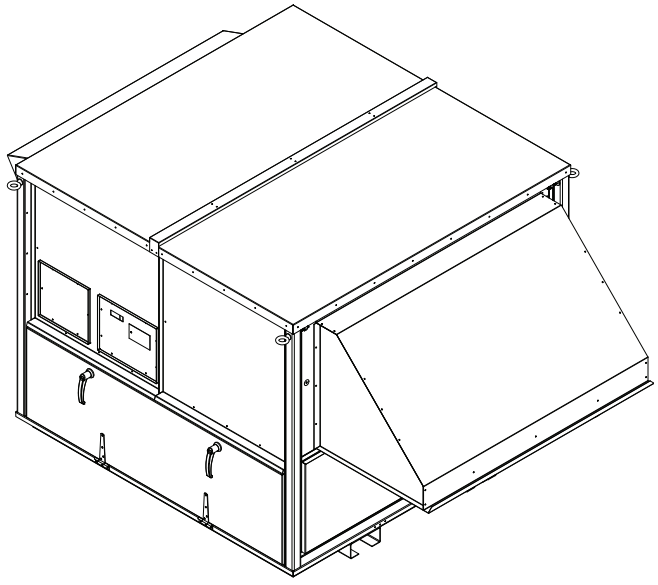
Product Data

62E Packaged Energy Recovery Ventilator 50 Hz

165 to 11,800 L/s (350 to 25,000 cfm)





Energy recovery ventilator (ERV) units recover energy from building exhaust air and pre-condition ventilation air. These units are designed to satisfy new higher ventilation requirements and other building codes while minimizing the cost of energy.

One-piece 62E unit provides:

- Efficiency
- Cost savings
- Dependable performance
- Easy maintenance
- AHRI (Air Conditioning, Heating, and Refrigeration Institute, USA Standard) certified wheel

Features/Benefits

The 62E ERV units save on both initial costs and operating costs by reducing the rooftop unit cooling load up to 11 kW per 500 L/s (3 tons per 1000 cfm) of ventilation and by recovering energy from exhaust air to operate efficiently.

The 62E unit is available in dedicated vertical or horizontal configurations. The vertical configuration can be used with the stand-alone roof curb or with combination curbs available for all Carrier rooftop units. The unit can be installed on a standard roof curb for vertical supply and return, or on an optional horizontal box for side supply and return. The horizontal configuration can be used for stand-alone duty or with a transition accessory for connection to rooftop units with horizontal return airflow.

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Features/Benefits (cont)

Advantages include:

- Standard double wall construction on the indoor side of the energy recovery wheel.
- Constructed of pre-painted steel.
- Rugged desiccant-coated rotary energy recovery wheels provide superior sensible and latent heat recovery efficiency.
- Blowers are single-width, single-inlet with backward inclined wheels and use electronically commutated (EC) motors with integral variable speed drives. The 62EA models use forward-curved centrifugal fans with direct-drive motors.

Why an ERV Unit?

Governmental regulations call for an ever-increasing amount of outside air to be brought into a building as a way of diluting indoor pollutants.

This increased outside air intake can be handled one of two ways:

1. Select an oversized rooftop unit to handle the extreme conditions of outside air.
2. Select an ERV unit, which can be used to temper the outside air before it actually enters the rooftop unit.

The ERV unit uses a rotating energy recovery wheel that picks up warm air from the building exhaust and transfers it to the outside airstream during the winter. During the summer, the heat in the outside air is transferred to the exhaust air, which can reduce the cooling load by 11 kW per 500 L/s (3 tons per 1,000 cfm) of outside air. Carrier offers a computer program to calculate the ongoing related energy savings for the specific application and location.

The bottom line: Carrier's ERV units save on initial costs (by downsizing the rooftop unit), reduce operating costs, and provide a comfortable environment.

Energy recovery ventilator wheels are used in all Carrier ERV units. Energy recovery wheels have desiccant permanently bonded to the wheel.

Unit construction includes pre-painted steel ERV cabinets that are matched to the rooftop unit. The 62E ERV units include eye bolts in each corner of the cabinet for overhead rigging.

Integral blowers/motor modules have high-efficency backward incline fans with direct-drive, variable speed EC motors.

Energy recovery ventilators — the IAQ solution for today's "tight" buildings.

Indoor-air quality (IAQ) generally refers to the level of pollutants inside a building. These pollutants include cigarette smoke, carbon dioxide exhaled by occupants, radon gas, car exhaust, paint fumes, and odors.

Concern over increased indoor air pollutants has been spurred by several issues: 1) changes in new building construction methods and retrofit of older buildings have reduced air infiltration rates; 2) synthetic materials release airborne particles, odors, and chemicals; and 3) rooftop systems that bring in minimal fresh air.

In 1989, IAQ concerns caused ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers, U.S.A. standard) to recommend increased ventilation for all public buildings. Simply introducing fresh air into a building, however, is not always practical or cost effective. Additional ventilation can overload rooftop systems and increase energy costs.

An ERV unit offers the best solution to retaining the energy-conserving benefits of today's tighter building construction while improving indoor-air quality. Carrier's 62E ERV unit provides increased fresh air while keeping increased costs to a minimum. In addition, the 62E unit helps to reduce humidity levels, which helps to prevent deterioration of building materials and retards the growth of mold and mildew.

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Model number nomenclature

62E S G J J – K T H 9 1 – AA

62E — Energy Recovery Unit

Cabinet (wheel diameter)*
Vertical Configuration
B — 483 **K** — 1626 **R** — 2337
C — 635 **L** — 1727 **S** — 2515
D — 762 **M** — 1880 **T** — 2642
E — 914 **N** — 2057 **U** — 2794
H — 1321 **P** — 2184
Horizontal Configuration
2 — 635 **5** — 1321
3 — 762 **6** — 1626
4 — 914 **7** — 483

Wheel Type Option†
Total Enthalpy
A — 25 mm Std L/s
B — 38 mm Low L/s
C — 51 mm Std L/s
D — 76 mm Low L/s
F — 38 mm High L/s
G — 76 mm High L/s
Sensible Only
H — 25 mm Std L/s
J — 38 mm Low L/s
K — 51 mm Std L/s
L — 76 mm Low L/s
M — 38 mm High L/s
N — 76 mm High L/s
Total Enthalpy with Purge
T — 76 mm Low L/s
V — 76 mm High L/s

Supply Fan**
A — Centrifugal
B — (2) Centrifugal
C — 400 mm BI
D — (2) 400 mm BI
E — 500 mm BI
F — (2) 500 mm BI
G — (3) 500 mm BI
H — (4) 500 mm BI
J — (5) 500 mm BI
K — (6) 500 mm BI
L — 630 mm BI
M — (2) 630 mm BI
N — (3) 630 mm BI
P — (7) 500 mm BI
R — (8) 500 mm BI
S — 250 mm BI

Return Fan**
A — Centrifugal
B — (2) Centrifugal
C — 400 mm BI
E — 500 mm BI
F — (2) 500 mm BI
G — (3) 500 mm BI
H — (4) 500 mm BI
J — (5) 500 mm BI
K — (6) 500 mm BI
L — 630 mm BI
M — (2) 630 mm BI
N — (3) 630 mm BI
P — (7) 500 mm BI
R — (8) 500 mm BI

Control Interface Options
– — None
A — BACnet Interface
B — LON Interface

Factory-Installed Options

Post Wheel Heater Size
– — none
A — 2 kW
B — 5 kW
C — 8 kW
D — 10 kW
E — 15 kW
F — 20 kW
G — 25 kW
H — 30 kW
J — 35 kW
K — 40 kW
L — 45 kW
M — 50 kW
N — 55 kW
P — 60 kW
R — 65 kW
S — 70 kW
T — 75 kW
U — 80 kW
W — 85 kW

Series
0 — Original
1 — Second Generation

Voltage
A — 115-1-60/50
1 — 575-3-60/50
3 — 208/230-1-60/50
5 — 208/230-3-60/50
6 — 460-3-60/50
9 — 400-3-50

Disconnect
– — No Disconnect
A — 30A/240v Non-Fused
B — 60A/240v Non-Fused
C — 100A/240v Non-Fused
D — 200A/240v Non-Fused
E — 400A/240v Non-Fused
F — 30A/600v Non-Fused
G — 60A/600v Non-Fused
H — 100A/600v Non-Fused
J — 200A/600v Non-Fused
K — 30A/240v Fused
L — 60A/240v Fused
M — 100A/240v Fused
N — 200A/240v Fused
P — 400A/240v Fused
R — 30A/600v Fused
S — 60A/600v Fused
T — 100A/600v Fused
U — 200A/600v Fused

Frost Control
– — None
A — 2 kW
B — 5 kW
C — 8 kW
D — 10 kW
E — 15 kW
F — 20 kW
G — 25 kW
H — 30 kW
J — 35 kW
K — 40 kW
L — 45 kW
M — 50 kW
N — 55 kW
P — 60 kW
R — 65 kW
S — 70 kW
T — 75 kW
U — 80 kW
W — 85 kW
X — Frost Protection
Y — ERV Wheel VFD
Z — Low-Temperature Lockout

EZ ERV Control
– — Test Ports for Manual Balancing
B — Constant Volume with Manual Offset Air cfm
E — Modulating CO_2 Outdoor Air Control with Exhaust Offset cfm
J — Constant Outdoor Air cfm with Building Pressure Exhaust cfm Control
K — Modulating CO_2 Outdoor Air with Building Pressure Exhaust cfm Control

LEGEND
BI — Backward Inclined
VFD — Variable Frequency Drive

*Wheel diameter shown in mm.
†Wheel thickness shown in mm.
**Number in () refers to blower quantity. Wheel diameter shown in mm.

Physical data

SI

UNIT 62E	BA/7A	BC/7C	CC/2C	CD/2D	CG/2G	DD/3D	DG/3G
NOMINAL CAPACITY (L/s)	165	235	470	425	520	615	755
CAPACITY RANGE (L/s)	94-378	94-378	236-543	189-519	236-661	283-755	378-944
MAXIMUM SHIPPING WEIGHT (kg)	150	152	221	228	228	284	284
MAXIMUM OPERATING WEIGHT (kg)	127	130	199	205	205	262	262
UNIT DIMENSIONS (mm)							
Length (includes hoods)	1123/1242		1570/1461			1717/1455	
Width	790/925		980/1115			1128/1262	
Height	879/793		1069/983			1064/1130	
ROTARY ENERGY EXCHANGER							
Type	Monolithic			Segmented			
Size (Diam x Depth) (mm)	483 x 25	483 x 51	635 x 51	635 x 76		762 x 76	
Nominal Drive Motor kW	0.07	0.07	0.07	0.07		0.07	
SUPPLY/EXHAUST FANS							
Type	Centrifugal DWDI		Backward Inclined, Single Width Single Inlet				
Drive Type	Direct		EC Motor with Integral Frequency Drive				
Fan Option Code (see fan option table)	A	A, B	C			C	
FILTERS							
Type	51 mm Pleated						
Exhaust Air – Qty...Size (L x W x D) (mm)	1...305 x 610 x 51		1...356 x 635 x 51			2…406 x 635 x 51	
Outside Air – Qty...Size (L x W x D) (mm)	1...305 x 610 x 51		1...356 x 635 x 51			2…406 x 635 x 51	

UNIT 62E	EB/4B	ED/4D	EF/4F	EG/4G	HB/5B	HD/5D	HF/5F	HG/5G	KD/6D	KG/6G
NOMINAL CAPACITY (L/s)	660	1040	1040	1225	1415	2170	2170	2595	2125	3680
CAPACITY RANGE (L/s)	378-850	519-1227	614-1274	614-1652	661-1700	1038-2643	1038-2550	1415-3492	1180-2595	1888-4955
MAXIMUM SHIPPING WEIGHT (kg)	508	525	508	525	789	803	789	803	1157	1157
MAXIMUM OPERATING WEIGHT (kg)	485	503	485	503	766	781	766	781	1043	1043
UNIT DIMENSIONS (mm)										
Length (includes hoods)	2172/1798				2639/2035				2908/2187	
Width	1387/1521				1702/1836				1971/2106	
Height	1283/1389				1420/1704				1572/1974	
ROTARY ENERGY EXCHANGER										
Type	Segmented									
Size (Diam x Depth) (mm)	914 x 38	914 x 76	914 x 38	914 x 76	1321 x 38	1321 x 76	1321 x 38	1321 x 76	1626 x 76	
Nominal Drive Motor kW	0.1	0.1	0.1	0.1	0.1		0.1		0.2	
SUPPLY/EXHAUST FANS										
Type	Backward Inclined, Single Width Single Inlet									
Drive Type	EC Motor with Integral Frequency Drive									
Fan Option Code (see fan option table)	C, E				E, F	E, F, L			E, F, L, M	F, L, M
FILTERS										
Type	51 mm Pleated									
Exhaust Air – Qty...Size (L x W x D) (mm)	2…508 x 635 x 51				3…508 x 635 x 51				6…406 x 610 x 51	
Outside Air – Qty...Size (L x W x D) (mm)	2…508 x 635 x 51				3…508 x 635 x 51				6…406 x 610 x 51	

LEGEND

DWDI — Double Width, Double Inlet
EC — Electronically Commutated

SI (cont)

UNIT 62E	LD	LG	MD	MG	ND	NG	PD	PG
NOMINAL CAPACITY (L/s)	3585	4340	2830	5100	5200	6500	5950	7080
CAPACITY RANGE (L/s)	1650-4250	2360-5665	1415-3540	2595-6845	2595-6370	330-8260	2830-7315	3540-9440
MAXIMUM SHIPPING WEIGHT (kg)	1232	1308	1397	1397	1482	1482	1533	1608
MAXIMUM OPERATING WEIGHT (kg)	1118	1194	1283	1283	1368	1368	1420	1495
UNIT DIMENSIONS (mm)								
Length (includes hoods)	2355		2532		2685		2812	
Width	2162		2339		2492		2619	
Height	1687		1712		1737		1824	
ROTARY ENERGY EXCHANGER								
Type	Segmented							
Size (Diam x Depth) (mm)	1727 x 76		1880 x 76		2057 x 76		2184 x 76	
Nominal Drive Motor kW	0.2		0.2		0.2		0.2	
SUPPLY/EXHAUST FANS								
Type	Backward Inclined, Single Width Single Inlet							
Drive Type	EC Motor with Integral Frequency Drive							
Fan Option Code (see fan option table)	F, G, L, M	F, G, M	F, G, M		F, G, M	G, M	F, G, M	G, M
FILTERS								
Type	51 mm Pleated							
Exhaust Air – Qty...Size (L x W x D) (mm)	6…406 x 635 x 51		6…457 x 635 x 51		6…508 x 508 x 51		8…508 x 610 x 51	
Outside Air – Qty...Size (L x W x D) (mm)	6…406 x 635 x 51		6…457 x 635 x 51		6…508 x 508 x 51		8…508 x 610 x 51	

UNIT 62E	RD	RG	SD	SG	TD	TG	UD	UG
NOMINAL CAPACITY (L/s)	6500	8000	7800	9400	8500	10250	9700	11800
CAPACITY RANGE (L/s)	3300-8025	4250-11325	3775-9450	5190-13685	4250-10380	5665-14630	4720-11800	6600-16990
MAXIMUM SHIPPING WEIGHT (kg)	1974	1974	2126	2126	2486	2486	2486	2486
MAXIMUM OPERATING WEIGHT (kg)	1860	1860	2013	2013	2373	2373	2373	2373
UNIT DIMENSIONS (mm)								
Length (includes hoods)	3015		3117		3294		3447	
Width	2822		2924		3101		3251	
Height	1824		1925		2068		2118	
ROTARY ENERGY EXCHANGER								
Type	Segmented							
Size (Diam x Depth) (mm)	2337 x 76		2515 x 76		2642 x 76		2794 x 76	
Nominal Drive Motor kW	0.2		0.2		0.2		0.2	
SUPPLY/EXHAUST FANS								
Type	Backward Inclined, Single Width Single Inlet							
Drive Type	EC Motor with Integral Frequency Drive							
Fan Option Code (see fan option table)	G, H, J, M, N	G, H, J, N	H, J, K, N		H, K, J, N, P, R	K, J, N, P, R	H, K, J, N, P, R	
FILTERS								
Type	51 mm Pleated							
Exhaust Air – Qty...Size (L x W x D) (mm)	10…508 x 508 x 51		8…610 x 610 x 51		8…635 x 635 x 51		8…635 x 635 x 51	
Outside Air – Qty...Size (L x W x D) (mm)	10…508 x 508 x 51		8…610 x 610 x 51		8…635 x 635 x 51		8…635 x 635 x 51	

LEGEND

DWDI — Double Width, Double Inlet
EC — Electronically Commutated

Physical data (cont)

ENGLISH

UNIT 62E	BA/7A	BC/7C	CC/2C	CD/2D	CG/2G	DD/3D	DG/3G
NOMINAL CAPACITY (cfm)	350	500	1000	900	1100	1300	1600
CAPACITY RANGE (cfm)	200-800	200-900	500-1150	400-1100	500-1400	600-1600	800-2000
MAXIMUM SHIPPING WEIGHT (lb)	331	336	488	502	502	627	627
MAXIMUM OPERATING WEIGHT (lb)	281	286	438	452	452	577	577
UNIT DIMENSIONS (in.)							
Length (includes hoods)	44.2/48.9		61.8/57.5			67.6/57.3	
Width	31.1/36.4		38.6/43.9			44.4/49.7	
Height	34.6/31.2		42.1/38.7			41.9/44.5	
ROTARY ENERGY EXCHANGER							
Type	Monolithic			Segmented			
Size (Diam x Depth) (in.)	19 x 1.0	19 x 2.0	25 x 2.0	25 x 3.0		30 x 3.0	
Nominal Drive Motor Hp	0.09	0.09	0.09	0.09		0.09	
SUPPLY/EXHAUST FANS							
Type	Centrifugal DWDI		Backward Inclined, Single Width Single Inlet				
Drive Type	Direct		EC Motor with Integral Frequency Drive				
Fan Option Code (see fan option table)	A	A, B	C			C	
FILTERS							
Type	2 in. Pleated						
Exhaust Air – Qty...Size (L x W x D) (in.)	1...12 x 24 x 2		1…14 x 25 x 2			2…16 x 25 x 2	
Outside Air – Qty...Size (L x W x D) (in.)	1...12 x 24 x 2		1…14 x 25 x 2			2…16 x 25 x 2	

UNIT 62E	EB/4B	ED/4D	EF/4F	EG/4G	HB/5B	HD/5D	HF/5F	HG/5G	KD/6D	KG/6G
NOMINAL CAPACITY (cfm)	1,400	2,200	2,200	2,600	3,000	4,600	4,600	5,500	4,500	7,800
CAPACITY RANGE (cfm)	800-1,800	1,100-2,600	1,300-2,700	1,300-3,500	1,400-3,600	2,200-5,600	2,200-5,400	3,000-7,400	2,500-5,500	4,000-10,500
MAXIMUM SHIPPING WEIGHT (lb)	1,120	1,158	1,120	1,158	1,739	1,771	1,739	1,771	2,550	2,550
MAXIMUM OPERATING WEIGHT (lb)	1,070	1,108	1,070	1,108	1,689	1,721	1,689	1,721	2,300	2,300
UNIT DIMENSIONS (in.)										
Length (includes hoods)	85.5/70.8				103.9/80.1				114.5/86.1	
Width	54.6/59.9				67.0/72.3				77.6/82.9	
Height	50.5/54.7				55.9/67.1				61.9/77.7	
ROTARY ENERGY EXCHANGER										
Type	Segmented									
Size (Diam x Depth) (in.)	36 x 1.5	36 x 3.0	36 x 1.5	36 x 3.0	52 x 1.5	52 x 3.0	52 x 1.5	52 x 3.0	64 x 3.0	
Nominal Drive Motor Hp	1/6	1/6	1/6	1/6	1/6		1/6		1/4	
SUPPLY/EXHAUST FANS										
Type	Backward Inclined, Single Width Single Inlet									
Drive Type	EC Motor with Integral Frequency Drive									
Fan Option Code (see fan option table)	C, E				E, F	E, F, L			E, F, L, M	F, L, M
FILTERS										
Type	2 in. Pleated									
Exhaust Air – Qty...Size (L x W x D) (in.)	2…20 x 25 x 2				3…20 x 25 x 2				6…16 x 24 x 2	
Outside Air – Qty...Size (L x W x D) (in.)	2…20 x 25 x 2				3…20 x 25 x 2				6…16 x 24 x 2	

LEGEND

DWDI — Double Width, Double Inlet
EC — Electronically Commutated

ENGLISH (cont)

UNIT 62E	LD	LG	MD	MG	ND	NG	PD	PG
NOMINAL CAPACITY (cfm)	7,600	9,200	6,000	10,800	11,000	13,800	12,600	15,000
CAPACITY RANGE (cfm)	3,500-9,000	5000-12,000	3000-7500	5500-14,500	5500-13,500	7000-17,500	6000-15,500	7500-20,000
MAXIMUM SHIPPING WEIGHT (lb)	2,715	2,883	3,079	3,079	3,267	3,267	3,381	3,545
MAXIMUM OPERATING WEIGHT (lb)	2,465	2,633	2,829	2,829	3,017	3,017	3,131	3,295
UNIT DIMENSIONS (in.)								
Length (includes hoods)	92.7		99.7		105.7		110.7	
Width	85.1		92.1		98.1		103.1	
Height	66.4		67.4		68.4		71.8	
ROTARY ENERGY EXCHANGER								
Type	Segmented							
Size (Diam x Depth) (in.)	68 x 3.0		74 x 3.0		81 x 3.0		86 x 3.0	
Nominal Drive Motor Hp	1/4		1/4		1/4		1/4	
SUPPLY/EXHAUST FANS								
Type	Backward Inclined, Single Width Single Inlet							
Drive Type	EC Motor with Integral Frequency Drive							
Fan Option Code (see fan option table)	F, G, L, M	F, G, M	F, G, M		F, G, M	G, M	F, G, M	G, M
FILTERS								
Type	2 in. Pleated							
Exhaust Air – Qty...Size (L x W x D) (in.)	6…16 x 25 x 2		6…18 x 25 x 2		8…20 x 20 x 2		8…20 x 24 x 2	
Outside Air – Qty...Size (L x W x D) (in.)	6…16 x 25 x 2		6…18 x 25 x 2		8…20 x 20 x 2		8…20 x 24 x 2	

UNIT 62E	RD	RG	SD	SG	TD	TG	UD	UG
NOMINAL CAPACITY (cfm)	13,800	17,000	16,500	20,000	18,000	21,700	20,500	25,000
CAPACITY RANGE (cfm)	7,000-17,000	9,000-24,000	8,000-20,000	11,000-29,000	9,000-22,000	12,000-31,000	10,000-25,000	14,000-36,000
MAXIMUM SHIPPING WEIGHT (lb)	4351	4351	4688	4688	5481	5481	5481	5481
MAXIMUM OPERATING WEIGHT (lb)	4101	4101	4438	4438	5231	5231	5231	5231
UNIT DIMENSIONS (in.)								
Length (includes hoods)	118.7		122.7		129.7		135.7	
Width	111.1		115.1		122.1		128.0	
Height	71.8		75.8		81.4		83.4	
ROTARY ENERGY EXCHANGER								
Type	Segmented							
Size (Diam x Depth) (in.)	92 x 3.0		99 x 3.0		104 x 3.0		110 x 3.0	
Nominal Drive Motor Hp	1/3		1/3		1/3		1/3	
SUPPLY/EXHAUST FANS								
Type	Backward Inclined, Single Width Single Inlet							
Drive Type	EC Motor with Integral Frequency Drive							
Fan Option Code (see fan option table)	G, H, J, M, N	G, H, J, N	H, J, K, N		H, K, J, N, P, R	K, J, N, P, R	H, K, J, N, P, R	
FILTERS								
Type	2 in. Pleated							
Exhaust Air – Qty...Size (L x W x D) (in.)	10…20 x 20 x 2		8…24 x 24 x 2		8…25 x 25 x 2		8…25 x 25 x 2	
Outside Air – Qty...Size (L x W x D) (in.)	10…20 x 20 x 2		8…24 x 24 x 2		8…25 x 25 x 2		8…25 x 25 x 2	

LEGEND

DWDI — Double Width, Double Inlet
EC — Electronically Commutated

Physical data (cont)

SUPPLY/EXHAUST FAN OPTIONS PHYSICAL DATA — SI

FAN OPTION CODE	A	B	C	E	F	G	H
Wheels Qty...Width (mm)	1…128 x 110	2…128 x 110	1…400	1…500	2…500	3…500	4…500
Nominal Motor kW (per each fan)	0.45	0.45	0.88	2.70	2.70	2.70	2.70

FAN OPTION CODE	J	K	L	M	N	P	R	S
Wheels Qty...Width (mm)	5…500	6…500	1…630	2…630	3…630	7…500	8…500	1…250
Nominal Motor kW (per each fan)	2.70	2.70	2.90	2.90	2.90	2.70	2.70	2.70

SUPPLY/EXHAUST FAN OPTIONS PHYSICAL DATA — ENGLISH

FAN OPTION CODE	A	B	C	E	F	G	H
Wheels Qty...Width (in.)	1…5 x 4 1/8	2…5 x 4 1/8	1…15 3/4	1…19 3/4	2…19 3/4	3…19 3/4	4…19 3/4
Nominal Motor Hp (per each fan)	0.61	0.61	1.18	3.62	3.62	3.62	3.62

FAN OPTION CODE	J	K	L	M	N	P	R	R
Wheels Qty...Width (in.)	5…19 3/4	6…19 3/4	1…24 3/4	2…24 3/4	3…24 3/4	7…19 3/4	8…19 3/4	1…9 7/8
Nominal Motor Hp (per each fan)	3.62	3.62	3.89	3.89	3.89	3.62	3.62	3.62

Options and accessories

ITEM	OPTION	ACCESSORY
Total Energy Recovery Wheel	X (Std)	
Sensible Energy Recovery Wheel	X	
Total Energy Recovery Wheel with Mechanical Purge (3-in. wheels only)	X	
EzERV - Constant Volume Supply and Exhaust with Manual Offset Air Control	X	
EzERV - Modulating Supply with CO_2 Control with Exhaust Air Tracking and Manual Offset	X	
EzERV - Constant Volume Supply, Modulating Exhaust with Building Pressure Control	X	
EzERV - Modulating Supply with CO_2 Control, Modulating Exhaust with Building Pressure Control	X	
BACnet* Communication Interface	X	
LON Communication Interface	X	
Pre-Heaters (for frost protection)	X	
Post-Heaters (for supply air heating)	X	
Three-Stage Electric Heater Control (for pre-heaters or post-heaters)	X	
Frost Protection	X	
ERV Modulating Wheel Frost Protection	X	
Low Temperature Lockout	X	
Electrical Disconnects	X	
ERV Filter Maintenance Indicators	X	
ERV Wheel and Blower Maintenance Indicators	X	
Motorized Dampers	X	
Rooftop Economizer Option, Shutdown ERV	X	
Rooftop Economizer Option, ERV Provides Power Exhaust Air Relief	X	
ERV Remote Timer		X
Remote Readout		X
Roof Curb		X
Combination ERV-RTU Roof Curb		X
Drop-in Damper Box		X
ERV-to-Rooftop Unit Transition (horizontal return RTUs)		X
Horizontal Supply and Return ERV Base		X
***Comfort*Link™ Interface Device**	X	

LEGEND

ERV — Energy Recovery Ventilator
RTU — Rooftop Unit

*Sponsored by ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers).

Energy recovery wheel factory-installed options

Total recovery energy wheel (standard) — The heat recovery wheel utilizes a polymer film matrix with a silica gel desiccant coating to transfer both sensible and latent energy between the exhaust and ventilation air. The silica gel desiccant provides optimal latent energy transfer when the relative humidity of the airstream is above 30%.

Sensible energy recovery wheel — The heat recovery wheel utilizes a polymer film matrix to transfer sensible energy between the exhaust and ventilation air.

Total recovery energy wheel with mechanical purge — A mechanical purge sector with an adjustable angle may be used to limit the exhaust air transfer (carry-over) to less than 1%. This option is only available on 76 mm (3-in.) wheel options.

EzERV control factory-installed options — For applications where the ERV unit is to be run based on airflow rates, an EzERV control option should be ordered. With the EzERV control option, the outside air and exhaust air volumes are measured and displayed on a LCD (liquid crystal diode) screen located inside the ERV cabinet. The variable speed motors will modulate to maintain the programmable airflow set points. Dirty filters and system effect will not affect the unit airflow, provided the ERV fans can overcome the system static pressures.

EzERV configurations

Constant volume supply and exhaust with manual offset air control — The desired outside air airflow is programmed at the unit control panel. The offset between outside airflow and exhaust air airflow is also programmed. This allows the user to help control building pressure without additional building pressure controls.

Modulating supply with CO_2 control with exhaust air tracking and manual offset — The outside air blower(s) are modulated based on return air CO_2 level. The user will program minimum/maximum cfm levels and minimum/maximum CO_2 levels inside with the EzERV user interface. The outside air cfm will now modulate between the maximum/minimum cfm settings based on the CO_2 levels inside the building. The offset between outside air cfm and exhaust air cfm is also programmed and the exhaust blower(s) will modulate to maintain the differential set point. A CO_2 sensor is included with this option.

Options and accessories (cont)

Constant volume supply with modulating ehaust and building pressure control — The desired outside air cfm is programmed at the unit control panel. The exhaust blower(s) are modulated based on building pressure. The user will program a building pressure set point with the EzERV user interface. A building static pressure sensor is included with this option.

Modulating supply with CO_2 control and modulating exhaust with building pressure control — The outside air blower(s) are modulated based on return air CO_2 level. The user will program minimum/maximum airflow levels and minimum/maximum CO_2 levels inside with the EzERV user interface. The outside airflow will now modulate between the maximum/minimum airflow settings based on the CO_2 levels inside the building. The exhaust blower(s) are modulated based on building pressure. The user will program a building pressure set point with the EzERV user interface. A CO_2 sensor and building static pressure sensor are included with this option.

Communication factory-installed options

BACnet communication interface — Provides remote communication access to the 62E control logic via BACnet protocol.

LON communication interface — Provides remote communication access to the 62E control logic via LON protocol.

***Comfort*Link™ interface device —** Provides a control interface through the LEN (local equipment network) between the 62E unit and a Carrier rooftop unit using the *Comfort*Link DDC (direct digital controls) control system. This interface allows for optimal system operation by sharing unit data and properly coordinating energy recovery, economizer, and power exhaust operation.

Factory-installed options

Pre-heaters — Some climates may dictate the use of an electric pre-heater to warm the outside air before it enters the ERV unit. This prevents frost build-up on the ERV wheel. Refer to the Carrier E-cat selection software for details. Pre-heaters are factory-installed into the unit. A static pressure sensor detects static increase on the ERV wheel due to frost build-up. This activates the pre-heater if temperature is below its set point and static is detected across the ERV wheel.

Post-heaters — With stand-alone and some coupled applications, it may be desirable to ensure a minimum air temperature for air being supplied by the ERV. The electric post-heaters are installed on the leaving side of the energy recovery wheel.

Three-stage heater control — Standard pre-heaters and post-heaters are single stage. Pre-heaters are controlled based on an outdoor air temperature set point and post-heaters are controlled based on a minimum air temperature leaving the energy recovery wheel. The three-stage heater control option provides two additional set points to allow incremental heater capacity control based on the outdoor or wheel discharge air temperature.

Frost protection — Applications with extremely cold climates may use the frost protection option as a means of eliminating frost build-up on the ERV wheel. Refer to the Carrier E-cat selection software to determine if required. When frost builds up on the ERV wheel, the outside air blower is temporarily shut off and the warmer exhaust air "defrosts" the wheel. Once the frost build-up is eliminated, the outside air blower is reactivated.

ERV modulating wheel frost protection — Applications with extremely cold climates may use the frost protection option as a means of eliminating frost build-up on the ERV wheel. Refer to the Carrier E-cat selection software to determine if required. When frost builds up on the ERV wheel, the ERV wheel is temporarily slowed down, making the ERV air "defrost" the wheel. Once the frost build-up is eliminated, the ERV wheel returns to normal speed.

Low temperature lockout — For applications where the ERV unit is to be locked out in extremely cold temperatures, the low temperature lockout option should be used. When outside air temperature is below set point the ERV unit is completely shutdown. The thermostat range can go down to –34.4 C (–30 F) and is user controlled.

Electrical disconnects — Factory-installed electrical disconnects are available for most ERV units. Disconnects are sized to handle the ERV unit and pre-heater (when ordered together). Both non-fused and fused disconnects are available.

ERV filter maintenance indicators — The ERV monitors pressure drop across the outside air intake filters and the exhausts air filters. As filters get dirty a rising static pressure across the dirty filter will initiate an alarm. The ERV LCD displays that the filter needs to be replaced and a dry contact is closed, which can be connected to a building management system if present.

ERV wheel and blower maintenance indicators — This option monitors the ERV wheel for movement, and the outside air and the exhaust air blowers/motors. If the ERV wheel is enabled and no movement occurs, of if there is a problem detected with either blower, the ERV LCD displays that the wheel or blower needs to be serviced and a dry contact is closed, which can be connected to a building management system if present.

Motorized dampers — Two-position motorized outside air and exhaust air dampers are available to eliminate unwanted outside air into the building space when the ERV unit is off. Motors are factory-installed and wired.

Rooftop economizer option, shutdown ERV — When used in conjunction with the rooftop unit's economizer this option will completely shut down the ERV when the rooftop unit goes into free cooling.

Rooftop economizer option with power relief — When used in conjunction with the rooftop unit's economizer this option will turn off the ERV outside air blower, keep the ERV exhaust blower on, and energize the ERV wheel periodically to prevent contamination build-up on the ERV wheel, during the "free-cooling" operation of the HVAC (heating, ventilation, and air conditioning) unit.

Field-installed accessories

ERV remote timer — If the ERV unit is to be activated at only certain times of the day or week, the ERV control timer option may be used. This 115-v timer is to be field-mounted and wired.

Remote readout — The remote readout panel offers a convenient means for monitoring the ERV status from a remote location.

Roof curb — Roof curbs are constructed of heavy gage galvanized steel and include a wood nailer and gasketing package for a tight unit-to-curb seal. Insulated deck pans and duct supports are provided. For stand-alone down discharge units, ductwork can slide into supply and return openings and hang from the top of the curb. The standard curb is 356 mm (14 in.) tall and is manufactured to NRCA (National Roofing Contractors Association) specifications.

Combination ERV-RTU roof curb — The combination curb is a single curb that holds both the rooftop unit and the ERV on the same curb. The transition of the air happens in transitions within the curb. The combination curb allows for ease of set-up and installation at the jobsite. Only one curb has to be set as opposed to setting 2 curbs and a transition. The proper distance will always be set between the HVAC unit and the ERV. The combination curbs are designed to allow the standard HVAC economizers and powered exhaust to be installed in the rooftop units. Combination curbs are available to mate any ERV to any Carrier rooftop unit that has a vertical return.

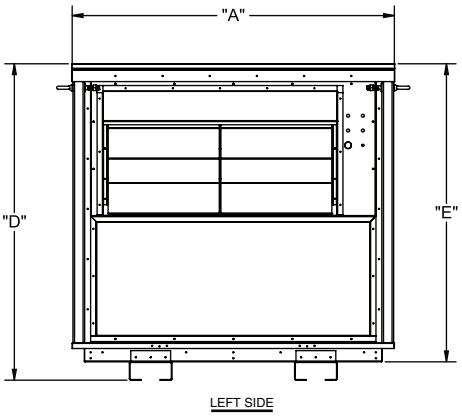
Drop-in damper box — Drop-in damper boxes can be used in place of the combination curb with vertical return rooftop units. The damper box would be installed in the HVAC curb return chamber. The contractor would then make two duct runs under the roof. One would be from the supply side of the ERV to the supply side of the damper box. The second would be from the return side of the ERV to the return side of the damper box. A maximum duct length of 30.5 m (100 ft) equivalent duct per run between the ERV and the damper box is recommended. This configuration allows for the ERV to be located on any side of the HVAC unit.

ERV-to-rooftop unit transition — The ERV-to-rooftop unit transitions are available to connect the 62E ERV unit directly to Carrier packaged rooftop units with horizontal return configurations. Each transition is custom designed to connect a specific ERV unit to a specific Carrier packaged rooftop unit. Transitions are shipped fully assembled and are constructed of pre-painted steel to match the finish of the HVAC unit and the ERV unit. The 25 mm (1 in.), 2-lb insulation is factory installed.

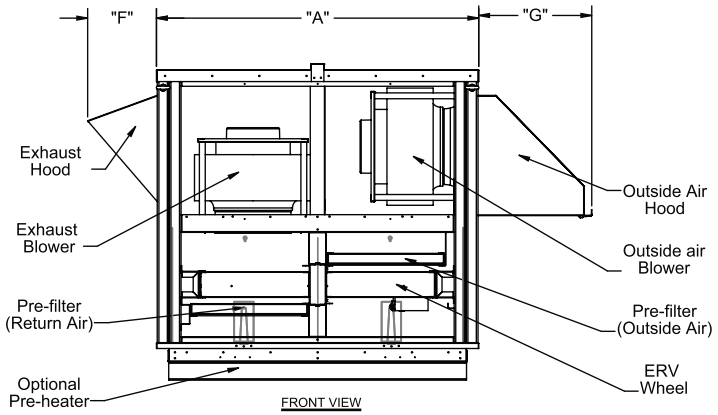
Horizontal supply and return ERV base — The standard ERV configuration has bottom return and discharge openings. When horizontal return and discharge connections are desired the optional horizontal base must be used. This base may be used in conjunction with the ERV-to-rooftop transitions or for stand-alone applications.

Base unit dimensions

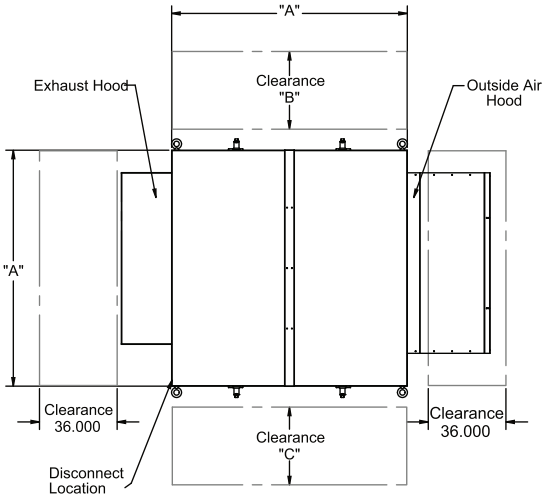
62EB-62EK VERTICAL UNIT CABINET DIMENSIONS

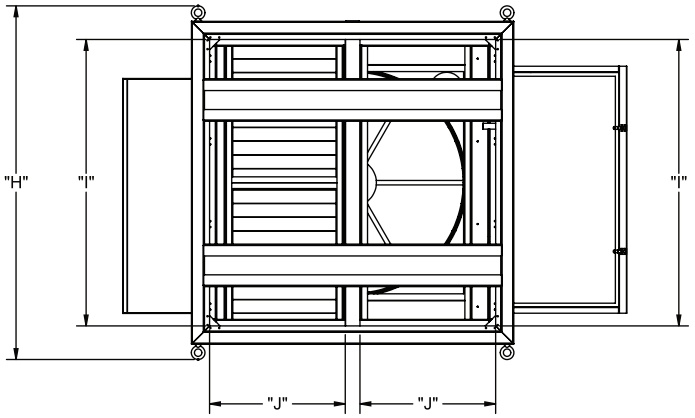


LEFT SIDE



FRONT VIEW





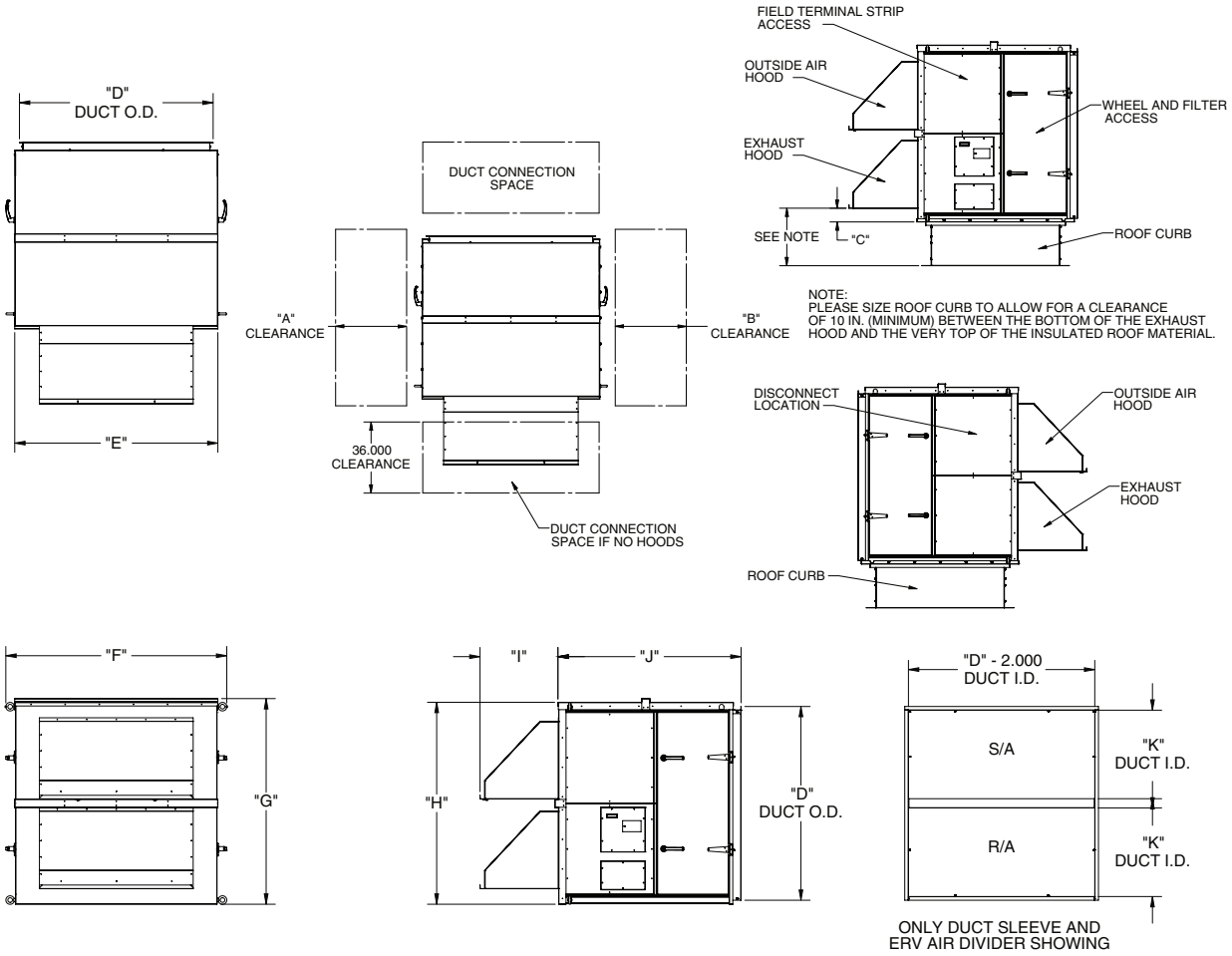
TOP VIEW

NOTES:
1. Clearance above cabinet is 24 inches (610 mm).
2. All dimensions shown in inches.

62E UNIT TYPE	DIMENSIONS (in.)									
	A	B	C	D	E	F	G	H	I	J
B	31.138	36.000	36.000	37.645	34.559	5.850	5.757	35.076	24.971	11.801
C	38.625	18.000	36.000	45.183	42.078	8.916	14.239	43.875	32.471	15.485
D	44.425	18.000	45.000	45.043	41.938	8.916	14.239	49.675	38.271	18.260
E	54.625	20.000	55.000	53.562	50.458	11.677	19.165	59.875	48.495	22.997
H	67.045	20.000	65.000	59.022	55.918	11.677	25.164	72.294	60.915	29.207
K	77.625	27.000	75.000	64.972	61.868	11.677	25.164	82.875	71.495	34.247

62E UNIT TYPE	DIMENSIONS (mm)									
	A	B	C	D	E	F	G	H	I	J
B	791	914	914	956	878	149	146	891	634	300
C	981	457	914	1148	1069	226	362	1114	825	393
D	1128	457	1143	1144	1065	226	362	1262	972	464
E	1387	508	1397	1360	1282	297	487	1521	1232	584
H	1703	508	1651	1499	1420	297	639	1836	1547	742
K	1972	686	1905	1650	1571	297	639	2105	1816	870

62E2-62E7 HORIZONTAL UNIT CABINET DIMENSIONS



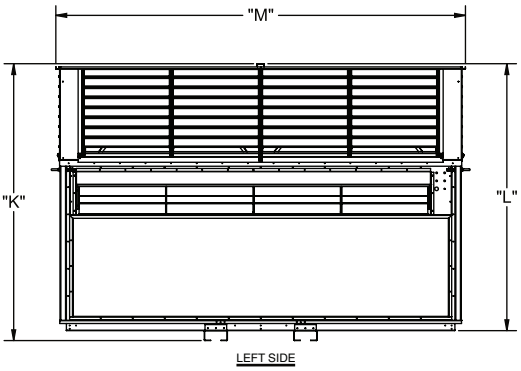
NOTES:
1. Clearance above cabinet is 24 inches (610 mm).
2. Dimensions are in inches.
3. Size the roof curb to allow for a clearance of 10-in. (254 mm) (minimum) between the bottom of the exhaust hood and the top of the insulated roof material.

62E UNIT TYPE	DIMENSIONS (in.)										
	A	B	C	D	E	F	G	H	I	J	K
7	36.000	36.000	1.869	28.995	31.734	36.375	32.176	31.186	11.984	36.905	12.813
2	18.000	36.000	1.179	36.495	39.171	43.875	39.663	38.673	16.215	41.239	16.497
3	18.000	40.000	3.795	42.295	44.847	49.675	45.463	44.473	16.215	41.099	19.272
4	18.000	50.000	4.238	52.495	55.066	59.875	55.673	54.673	21.132	49.631	23.997
5	24.000	64.000	4.516	64.915	67.486	72.295	68.093	67.093	27.131	53.013	30.207
6	18.000	75.000	9.542	75.495	78.066	82.875	78.673	77.673	27.131	58.963	35.247

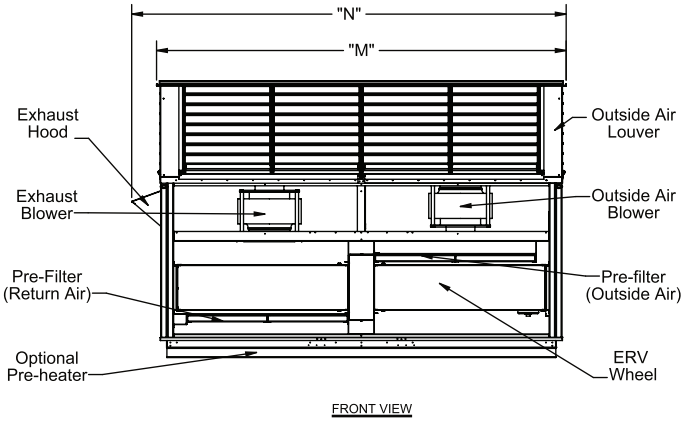
62E UNIT TYPE	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	I	J	K
7	914	914	47	736	806	924	817	792	304	937	325
2	457	914	30	927	995	1114	1007	982	412	1047	419
3	457	1016	96	1074	1139	1262	1155	1130	412	1044	490
4	457	1270	108	1333	1399	1521	1414	1389	537	1261	610
5	610	1626	115	1649	1714	1836	1730	1704	689	1347	767
6	457	1905	242	1918	1983	2105	1998	1973	689	1498	895

Base unit dimensions (cont)

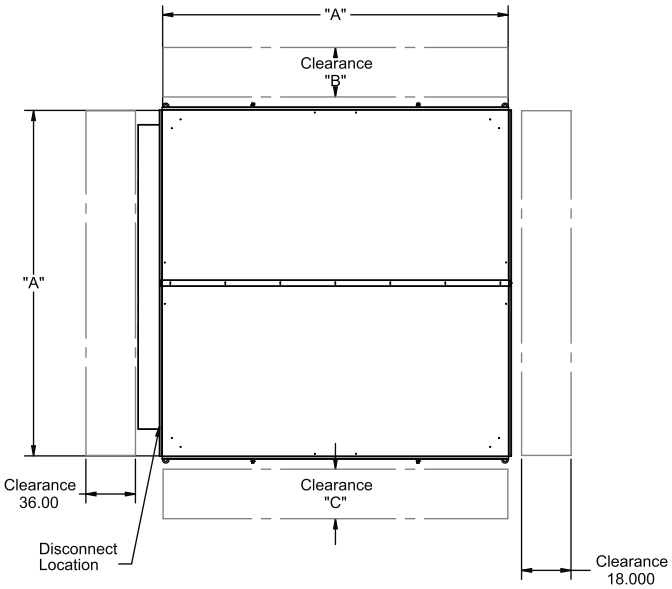
62EL-62EU UNIT CABINET DIMENSIONS

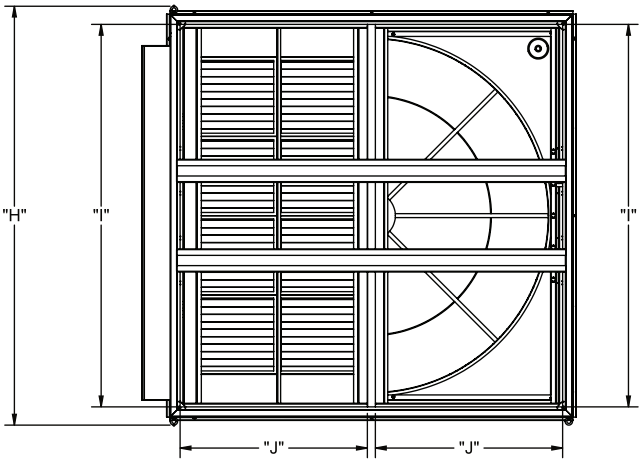


LEFT SIDE



FRONT VIEW





TOP VIEW

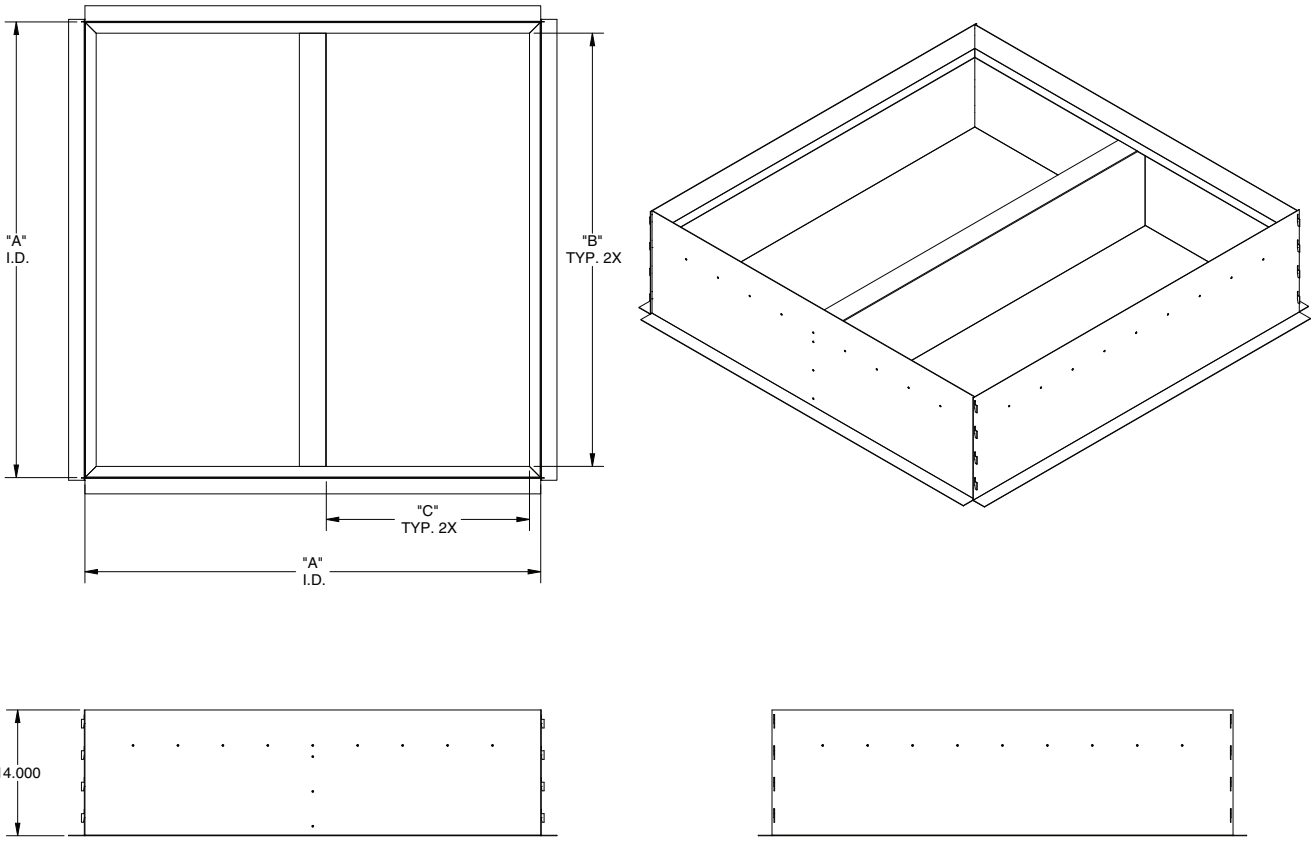
NOTES:
1. Clearance above cabinet is 36 inches (915 mm).
2. All dimensions shown in inches.

62E UNIT TYPE	DIMENSIONS (in.)									
	A	B	C	H	I	J	K	L	M	N
L	82.750	30.000	85.000	85.536	76.471	36.985	69.500	66.396	85.076	92.747
M	89.750	30.000	95.000	92.536	83.471	40.485	70.500	67.396	92.076	99.747
N	95.750	30.000	97.000	98.536	89.471	43.485	71.500	68.396	98.076	105.747
P	100.750	32.000	105.000	103.536	94.471	45.985	74.910	71.806	103.076	110.747
R	108.750	32.000	115.000	111.536	102.471	49.985	74.910	71.806	111.076	118.747
S	112.750	32.000	115.000	115.536	106.471	51.985	78.910	75.806	115.076	122.747
T	119.750	32.000	122.000	122.536	113.471	55.485	84.490	81.386	122.076	129.747
U	125.625	32.000	125.000	130.875	119.495	58.497	86.510	83.405	127.971	135.727

62E UNIT TYPE	DIMENSIONS (mm)									
	A	B	C	H	I	J	K	L	M	N
L	2102	762	2159	2173	1942	937	1765	1686	2161	2356
M	2280	762	2413	2350	2120	1028	1791	1712	2339	2534
N	2432	762	2464	2503	2273	1105	1816	1737	2491	2686
P	2559	813	2667	2630	2400	1168	1903	1824	2618	2813
R	2762	813	2921	2833	2603	1270	1903	1824	2821	3016
S	2864	813	2921	2935	2704	1320	2004	1925	2923	3118
T	3042	813	3099	3112	2882	1409	2146	2067	3101	3296
U	3191	813	3175	3324	3035	1486	2197	2118	3250	3447

Accessory dimensions

62EB-62EU UNIT KNOCK-DOWN CURB DIMENSIONS



NOTES:
1. All dimensions shown in inches.
2. Nailer sits even with top of curb. Do not cover any existing holes with nailer.

62E UNIT TYPE	DIMENSION A (in.)	DIMENSION B (in.)	DIMENSION C (in.)
B	27.221	24.721	10.861
C	34.721	32.221	14.611
D	40.521	38.021	17.511
E	50.721	48.221	22.611
H	63.141	60.641	28.821
K	73.721	71.221	34.111
L	78.721	76.221	36.611

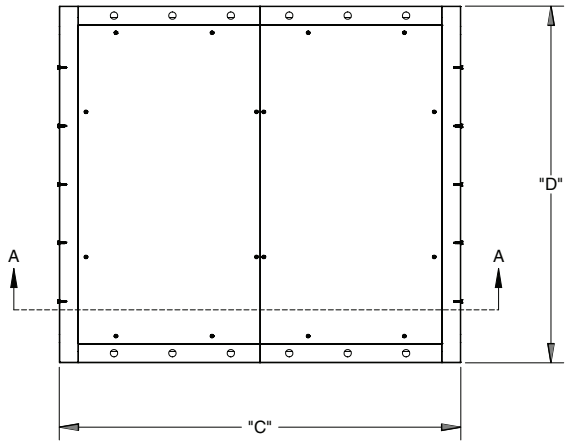
62E UNIT TYPE	DIMENSION A (in.)	DIMENSION B (in.)	DIMENSION C (in.)
M	85.721	83.221	40.111
N	91.721	89.221	43.111
P	96.721	94.221	45.611
R	104.721	102.221	49.611
S	108.721	106.221	51.611
T	115.721	113.221	55.111
U	121.721	119.221	58.111

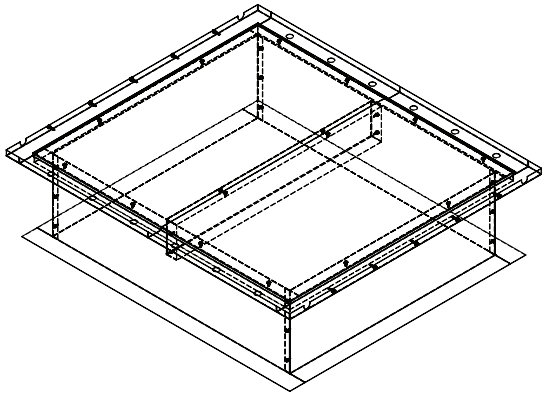
62E UNIT TYPE	DIMENSION A (mm)	DIMENSION B (mm)	DIMENSION C (mm)
B	691	628	276
C	882	818	371
D	1029	966	445
E	1288	1225	574
H	1604	1540	732
K	1873	1809	866
L	2000	1936	930

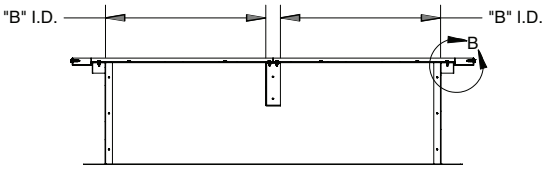
62E UNIT TYPE	DIMENSION A (mm)	DIMENSION B (mm)	DIMENSION C (mm)
M	2177	2114	1019
N	2330	2266	1095
P	2457	2393	1159
R	2660	2596	1260
S	2762	2698	1311
T	2939	2876	1400
U	3092	3028	1476

Accessory dimensions (cont)

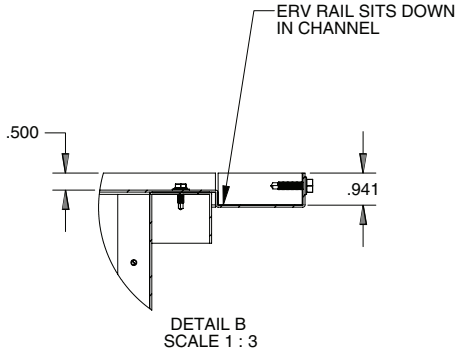
62E2-62E7 HORIZONTAL UNIT KNOCK-DOWN CURB DIMENSIONS



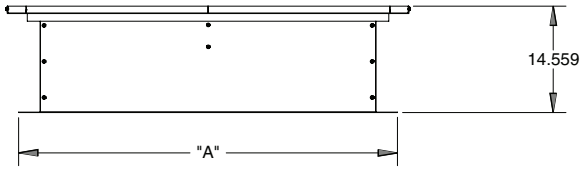


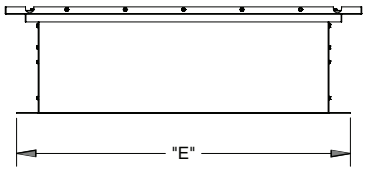


SECTION A-A



DETAIL B
SCALE 1 : 3



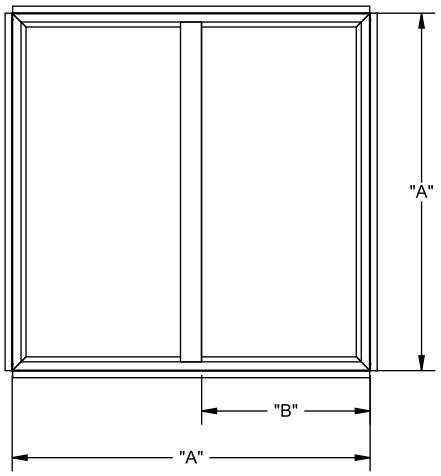


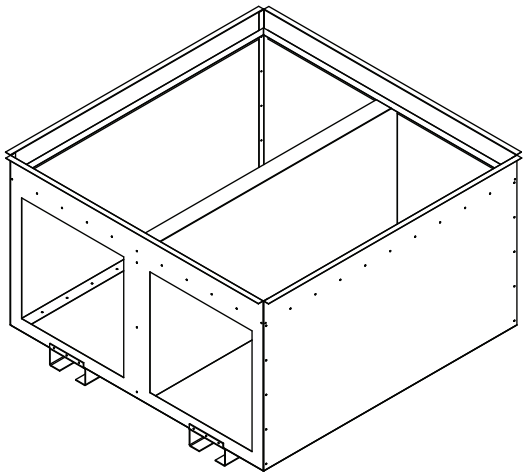
62E UNIT TYPE	DIMENSIONS (in.)				
	A	B	C	D	E
7	28.286	10.143	31.397	36.927	33.816
2	35.882	13.941	38.993	40.446	37.335
3	41.682	16.841	44.793	40.306	37.195
4	51.882	21.941	54.993	48.826	45.715
5	64.302	28.151	67.413	54.286	51.175
6	74.882	33.441	77.993	60.236	57.125

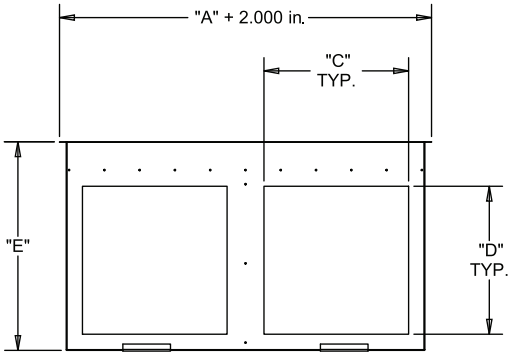
62E UNIT TYPE	DIMENSIONS (mm)				
	A	B	C	D	E
7	718	258	797	938	859
2	911	354	990	1027	948
3	1059	428	1138	1024	945
4	1318	557	1397	1240	1161
5	1633	715	1712	1379	1300
6	1902	849	1981	1530	1451

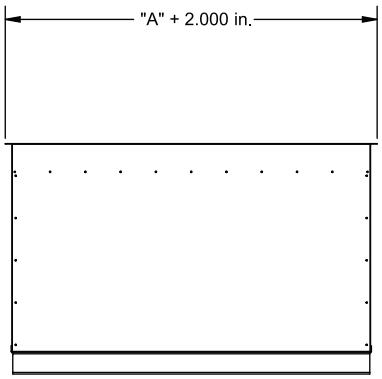
NOTE: Dimensions are in inches.

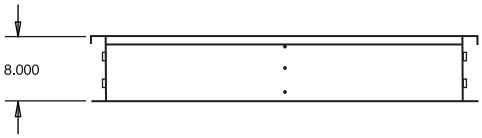
62EB-62EU UNIT HORIZONTAL DISCHARGE BOX DIMENSIONS











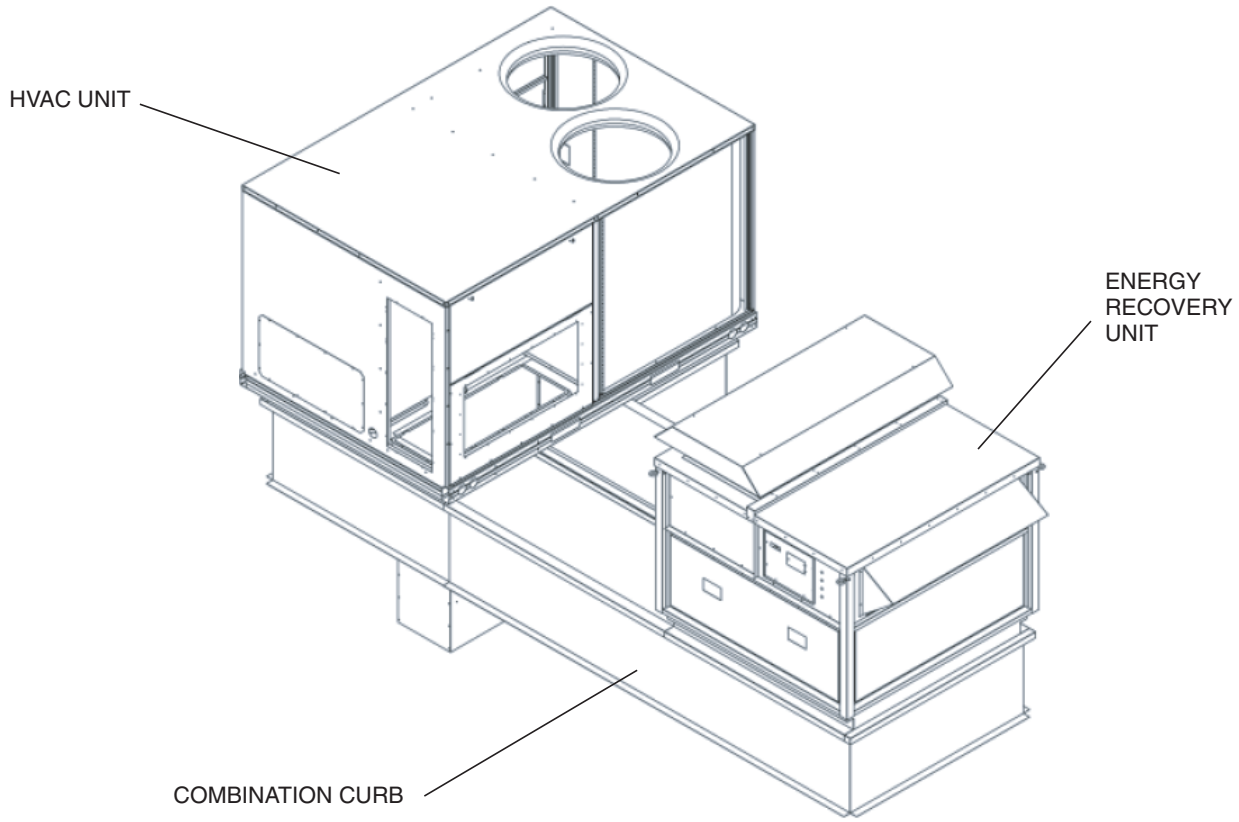
62E UNIT TYPE	DIMENSIONS (in.)				
	A	B	C	D	E
B	27.221	12.111	8.750	14.000	22.604
C	34.721	15.861	12.500	14.000	22.604
D	40.521	18.761	15.400	18.000	26.600
E	50.721	23.861	20.500	21.000	29.604
H	63.141	30.071	26.710	24.000	32.604
K	72.721	34.861	31.500	26.022	34.637
L	78.721	37.861	34.500	26.022	34.637
M	85.721	41.361	38.000	26.022	34.637
N	91.721	44.361	41.000	31.011	39.615
P	96.721	46.861	43.500	33.052	41.682
R	104.721	50.861	47.500	33.052	41.682
S	108.721	52.861	49.500	35.110	43.769
T	115.721	56.361	53.000	35.110	43.769
U	115.721	56.361	53.000	35.110	43.769

62E UNIT TYPE	DIMENSIONS (mm)				
	A	B	C	D	E
B	691	308	222	356	574
C	882	403	318	356	574
D	1029	477	391	457	676
E	1288	606	521	533	752
H	1604	764	678	610	828
K	1847	885	800	661	880
L	2000	962	876	661	880
M	2177	1051	965	661	880
N	2330	1127	1041	788	1006
P	2457	1190	1105	840	1059
R	2660	1292	1207	840	1059
S	2762	1343	1257	892	1112
T	2939	1432	1346	892	1112
U	2939	1432	1346	892	1112

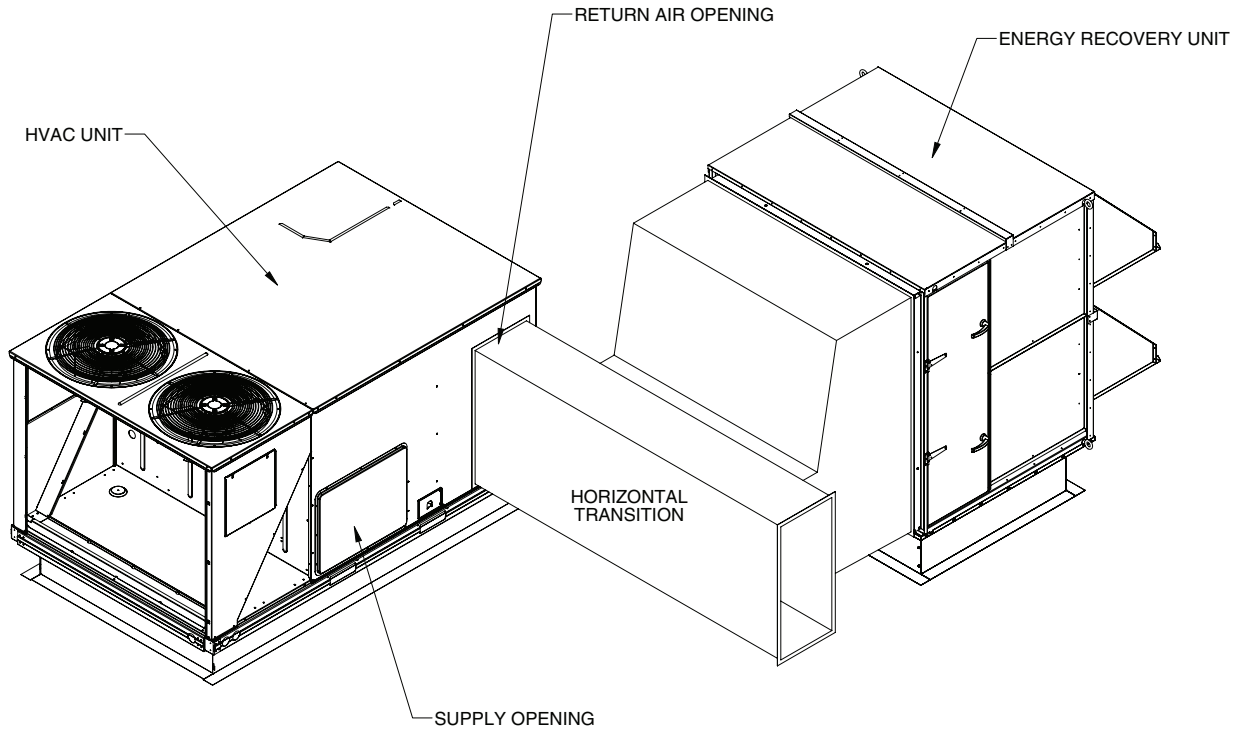
NOTE: Dimensions are in inches.

Typical installation

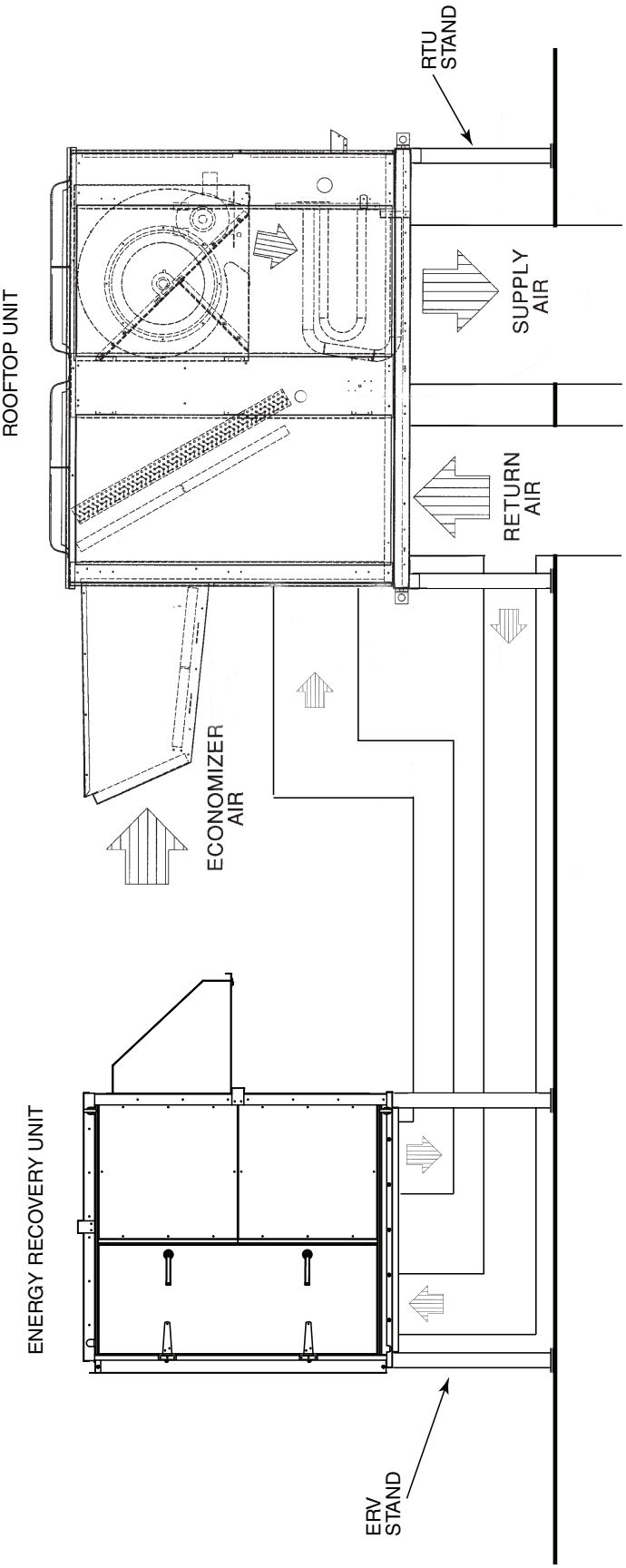
DOWN DISCHARGE COMBINATION CURB



HORIZONTAL DISCHARGE INSTALLATION

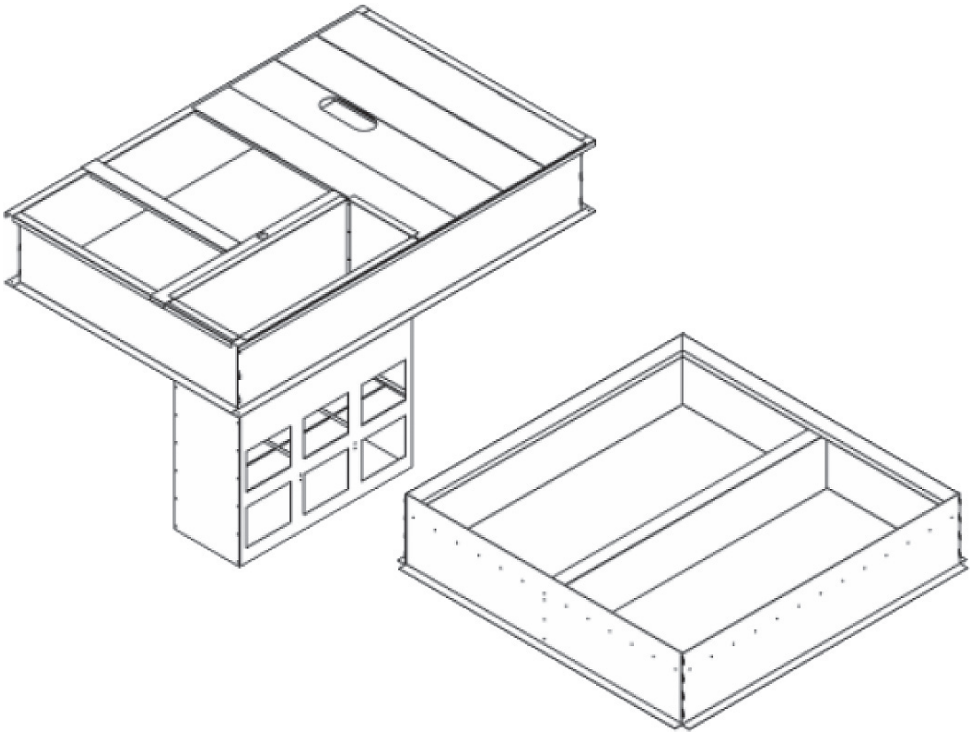


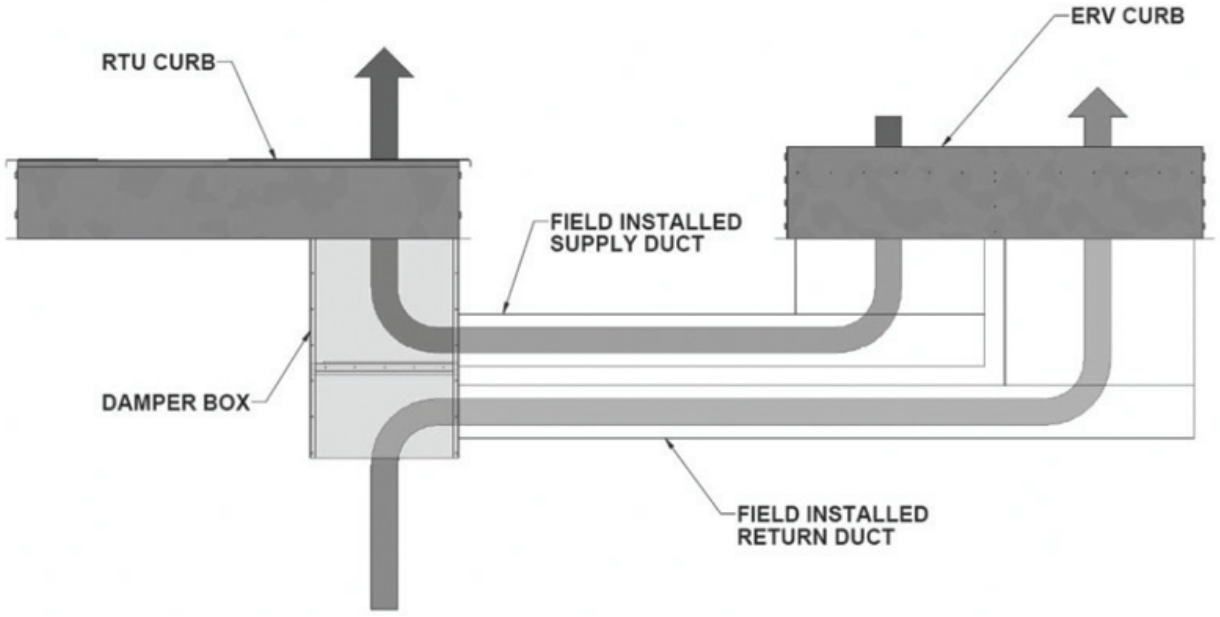
DOWN DISCHARGE ROOFTOP UNIT WITH DOWN DISCHARGE ERV



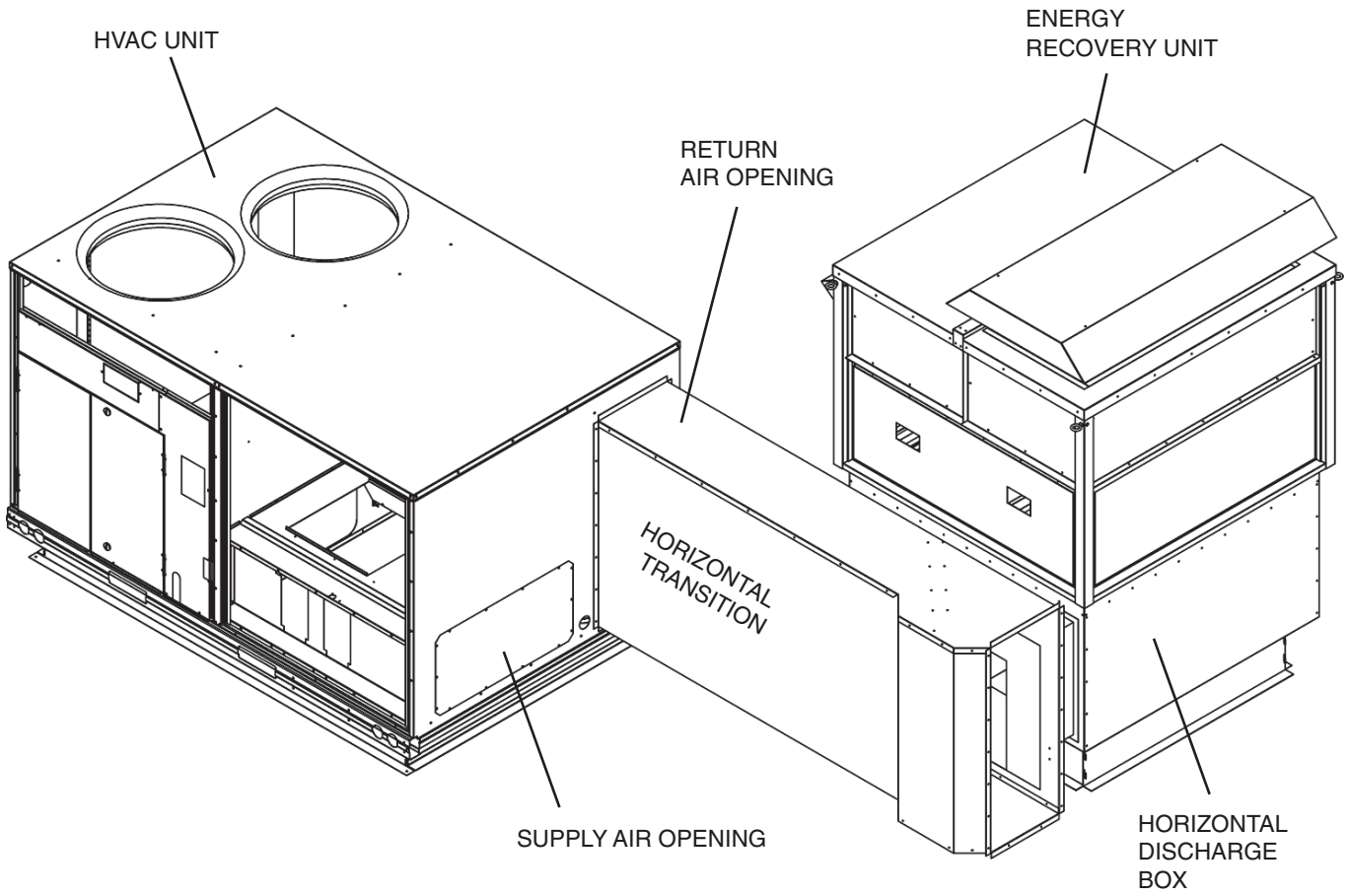
Typical installation (cont)

DROP-IN DAMPER BOXES





HORIZONTAL DISCHARGE TRANSITION UNIT WITH ERV



Selection procedure — SI

62E ERV selection software

The 62E energy wheel selection and performance analysis software simplifies the selection process. The software details energy recovered in both summer and winter operation. It provides leaving-air temperatures and system size reduction data for use in the selection of the primary rooftop equipment. In addition, it offers an energy saving analysis tool using ASHRAE bin weather data. Cost-savings data provided along with the designer's building load and equipment cost information allows for a complete payback or life-cycle cost analysis.

Manual selection procedure

I Application requirements:

Obtain the building load breakdown from the design engineer. Determine the design ventilation and exhaust airflows and temperatures for both winter and summer conditions. For example:

Given:
Ventilation Airflow . . . . . 1650 L/s
Exhaust Airflow. . . . . 1650 L/s
Unit Voltage 400-3-50
Design Outdoor Air Temperature,
  Summer . . . . . 32 C db, 23 C wb
  Winter . . . . . –21 C db
Indoor (Return) Air Temperature,
  Summer . . . . . 26 C db, 17 C wb
  Winter . . . . . 21.1 C db, 12 C wb, 30% RH
Minimum Required Energy Recovery Efficiency,
  Summer 60%
  Winter 60%
External Static Pressure (ESP),
  Exhaust. . . . . 187 Pa
  Ventilation (supply). . . . . 50 Pa

NOTE: Ventilation ESP varies by installation type. See below.

Combination Curbs: When the 62E is installed on a combination curb with the rooftop unit (RTU), use 50 Pa for the supply fan section ESP.

Horizontal Transition: When the 62E is installed on a horizontal base and uses a factory horizontal transition kit to attach to the RTU, use 50 Pa for the supply fan section ESP.

Drop-box: When the 62E is installed on a standard roof curb and is connected to the RTU using the drop-box accessory and field-installed ductwork, the supply ESP must be calculated. For the supply ESP use the sum of the duct losses between the ERV and drop-in damper box plus 25 Pa for the drop-in damper box loss.

II Determine the 62E unit size.

Refer to the 62E capacity range charts on pages 26 and 27 to determine which ERV wheels are capable of handling the required airflow.

For example:

ERV wheels EG, HB, HD, HF, HG, KD, LD, or MD could be used for 1650 L/s.

Refer to the tables for each of these wheels found on pages 29-31. Select the 62E wheel that most closely matches the required efficiency.

For example:

The HF wheel has a total cooling efficiency of 69.65%, sensible cooling efficiency of 74.1%, and a total heating efficiency of 71.25%.

The EG wheel efficiencies fall short of the minimum 60% requirement, and all other wheels have higher efficiencies.

NOTE: In cases where more than one wheel can meet the airflow and efficiency requirements, select based upon economics. A unit with a larger, more efficiency wheel may result in a lower cost if smaller fans can be used.

III Check fan performance for both supply and exhaust fans.

Refer to the 62EHF fan curves on page 43 to select the supply and exhaust fan options. The curves represent the maximum performance capability of each fan option. As the fans have integral variable speed drives, operation in the region below and to the left of each curve is acceptable.

Both the E and L fan options are capable of meeting the required 1650 L/s at the supply static of 50 Pa and return static of 187 Pa. Select the E fan option since it is the least expensive of these choices (refer to the price pages).

IV Calculate supply air temperatures.

Once the unit is selected, calculate the supply-air temperatures leaving the 62E unit, as they will be needed to select the packaged rooftop or HVAC unit.

Refer to the following equations to calculate the supply-air temperatures.

Cooling:
  Supply air dry bulb,
    T_{sa} db = T_{oa} db – E_s x (T_{oa} db – T_{ra} db)
    T_{sa} db = 32 – 0.741 x (32 – 24)
    T_{sa} db = 26 C
  Supply air wet bulb:
    T_{sa} wb = T_{oa} wb – E_T x (T_{oa} wb – T_{ra} wb)
    T_{sa} wb = 23 – 0.6965 x (23 – 17)
    T_{sa} wb = 19 C

Heating:
  Supply air dry bulb,
    T_{sa} db = T_{oa} db – E_T x (T_{oa} db – T_{ra} db)
    T_{sa} db = 21+ 0.7125 (21 – (–21))
    T_{sa} db = 8.8 C

Where:
T = dry bulb temperature (°F)
H = enthalpy in Btu/lb
db = dry bulb
wb = wet bulb
oa = outdoor air
ra = return air
sa = supply air

E_s = sensible effectiveness
E_T = total effectiveness

V Calculate energy recovered (psychrometric chart required):

a. Cooling:

From psychrometric chart, determine enthalpy of outside air at summer design temperature (32 db/23 wb) to be 1023 kJ/kg. Determine enthalpy of return air at (24 db/17 wb) to be 540 kJ/kg. From temperatures calculated in Step IV, determine supply air enthalpy to

Enthalpy Supply Air (H_{sa}) = $H_{oa} – E_T (H_{oa} – H_{ra})$
H_{sa} = 1023 – .6965 (1023 – 540)
H_{sa} = 687 kJ/kg

Energy Recovered (QT) = 1.73 x L/s x ($H_{oa} – H_{sa}$)
QT = 1.73 x 1650 x (1023 – 687)
QT = 958,900 W

B. Heating:

Enthalpy Supply Air (H_{sa}) = $H_{oa} + E_T (H_{ra} – H_{oa})$
H_{sa} = –1.83 +.7125 (319 – (–1.83))
H_{sa} = 226.7 kJ/kg

Energy Recovered (QT) = 1.73 x L/s x ($H_{sa} – H_{oa}$)
QT = 1.73 x 1650 x (226.7 – (–1.83))
QT = 652,514 W

VI Evaluate need for frost protection.

Using the Frost Thresholds Temperatures table on page 56 and winter design conditions of 21 C and 30% RH indoor (return) air and –21 C outdoor air, determine the frost threshold temperature of –19 C. Since the outdoor-air temperature is below the frost threshold, some method of frost protection is required. Select electric preheat for this example. Refer to the application data section starting on page 54 for other methods, and see the Preheat Frost Control Temperatures and Capacity Requirements at Selected Indoor and Outdoor Conditions table on page 57.

VII Select electric preheat.

a. Determine required preheat temperature rise from the Preheat Frost Control Temperatures and Capacity (ΔT) Requirements table on page 57. For 21.1 C and 30% RH indoor air and –20.6 C outdoor temperature, the table indicates that the preheat temperature design (temperature leaving preheater) should be –17.2 C, and the required capacity (rise) is 3.3° C.

b. Calculate preheat capacity required:
Required Reheat (W) = 0.67 x cfm x ΔT (F)
Btuh = 0.67 x 1650 x 3.3
= 3.65 kW

c. Refer to the available electric heater options and select the 5 kW heater which meets or exceeds the 3.65 kW requirement.

VIII Select appropriate accessories to suit application.

See table below.

REQUIRED ACCESSORIES PER APPLICATION

UNIT CONFIGURATION	APPLICATION			
RTU Configuration	Vertical		Horizontal	
ERV Configuration	Vertical	Vertical	Vertical	Horizontal
ERV to RTU Airflow	Contained with Combination Curb	Field-Supplied Duct, Under Roof	Factory Transitions, Above Roof	Factory Transitions, Above Roof
ACCESSORY	REQUIRED COMPONENTS			
Standard RTU Curb		X	X	X
Combination Curb	X			
Drop-In Damper Box		X		
ERV Curb		X		X
Horizontal Transition			X	X
Horizontal Base			X	

LEGEND
ERV — Energy Recovery Ventilator
RTU — Rooftop Unit

Selection procedure — English

62E ERV selection software

The 62E energy wheel selection and performance analysis software simplifies the selection process. The software details energy recovered in both summer and winter operation. It provides leaving-air temperatures and system size reduction data for use in the selection of the primary rooftop equipment. In addition, it offers an energy saving analysis tool using ASHRAE bin weather data. Cost-savings data provided along with the designer's building load and equipment cost information allows for a complete payback or life-cycle cost analysis.

Manual selection procedure

I Application requirements:

Obtain the building load breakdown from the design engineer. Determine the design ventilation and exhaust airflows and temperatures for both winter and summer conditions. For example:

Given:
Ventilation Airflow . . . . . 3500 cfm
Exhaust Airflow. . . . . 3500 cfm
Unit Voltage 400-3-50
Design Outdoor Air Temperature,
  Summer . . . . . 90 F db, 74 F wb
  Winter . . . . . .–7 F db
Indoor (Return) Air Temperature,
  Summer . . . . . 79 F db, 63 F wb
  Winter . . . . . 70 F db, 53 F wb, 30% RH
Minimum Required Energy Recovery Efficiency,
  Summer 60%
  Winter 60%
External Static Pressure (ESP),
  Exhaust. . . . . .0.75 in. wg
  Ventilation (supply). . . . . .0.20 in. wg

NOTE: Ventilation ESP varies by installation type. See below.

Combination Curbs: When the 62E is installed on a combination curb with the rooftop unit (RTU), use 0.20 in. wg for the supply fan section ESP.

Horizontal Transition: When the 62E is installed on a horizontal base and uses a factory horizontal transition kit to attach to the RTU, use 0.20 in. wg for the supply fan section ESP.

Drop-box: When the 62E is installed on a standard roof curb and is connected to the RTU using the drop-box accessory and field-installed ductwork, the supply ESP must be calculated. For the supply ESP use the sum of the duct losses between the ERV and drop-in damper box plus 0.10 in. wg for the drop-in damper box loss.

II Determine the 62E unit size.

Refer to the 62E capacity range charts on pages 26 and 27 to determine which ERV wheels are capable of handling the required airflow.

For example:

ERV wheels EG, HB, HD, HF, HG, KD, LD, or MD could be used for 3500 cfm.

Refer to the tables for each of these wheels found on pages 29-31. Select the 62E wheel that most closely matches the required efficiency.

For example:

The HF wheel has a total cooling efficiency of 69.65%, sensible cooling efficiency of 74.1%, and a total heating efficiency of 71.25%.

The EG wheel efficiencies fall short of the minimum 60% requirement, and all other wheels have higher efficiencies.

NOTE: In cases where more than one wheel can meet the airflow and efficiency requirements, select based upon economics. A unit with a larger, more efficiency wheel may result in a lower cost if smaller fans can be used.

III Check fan performance for both supply and exhaust fans.

Refer to the 62EHF fan curves on page 43 to select the supply and exhaust fan options. The curves represent the maximum performance capability of each fan option. As the fans have integral variable speed drives, operation in the region below and to the left of each curve is acceptable.

Both the E and L fan options are capable of meeting the required 3500 cfm at the supply static of 0.20 in. and return static of 0.75 in. Select the E fan option since it is the least expensive of these choices (refer to the price pages).

IV Calculate supply air temperatures.

Once the unit is selected, calculate the supply-air temperatures leaving the 62E unit, as they will be needed to select the packaged rooftop or HVAC unit.

Refer to the following equations to calculate the supply-air temperatures.

Cooling:

Supply air dry bulb,

$$T_{sa}\,db = T_{oa}\,db - E_s \times (T_{oa}\,db - T_{ra}\,db)$$
$$T_{sa}\,db = 90 - 0.741 \times (90 - 75)$$
$$T_{sa}\,db = 78.9\ F$$

Supply air wet bulb:

$$T_{sa}\,wb = T_{oa}\,wb - E_T \times (T_{oa}\,wb - T_{ra}\,wb)$$
$$T_{sa}\,wb = 74 - 0.6965 \times (74 - 63)$$
$$T_{sa}\,wb = 66.3\ F$$

Heating:

Supply air dry bulb,

$$T_{sa}\,db = T_{oa}\,db - E_T \times (T_{oa}\,db - T_{ra}\,db)$$
$$T_{sa}\,db = -7 + 0.7125\ (70 - (-7))$$
$$T_{sa}\,db = 47.9\ F$$

Where:
T = dry bulb temperature (°F)
H = enthalpy in Btu/lb
db = dry bulb
wb = wet bulb
oa = outdoor air
ra = return air
sa = supply air

E_s = sensible effectiveness
E_T = total effectiveness

V Calculate energy recovered (psychrometric chart required):

a. Cooling:

From psychrometric chart, determine enthalpy of outside air at summer design temperature (90 db/74 wb) to be 37.7 Btu/lb. Determine enthalpy of return air at (75 db/63 wb) to be 28.8 Btu/lb. From temperatures calculated in Step IV, determine supply air enthalpy to

Enthalpy Supply Air (H_{sa}) = $H_{oa} – E_T (H_{oa} – H_{ra})$
H_{sa} = 37.7 – .6965 (37.7 – 28.6)
H_{sa} = 31.36 Btu/lb

Energy Recovered (QT) = 4.5 x cfm x ($H_{oa} – H_{sa}$)
QT = 4.5 x 3500 x (37.7 – 31.36)
QT = 99,855 Btuh
QT (tons) = 99,855/12,000 = 8.3 tons

B. Heating:

Enthalpy Supply Air (H_{sa}) = $H_{oa} + E_T (H_{ra} – H_{oa})$
H_{sa} = –0.8 +.7125 (22.1 – (–0.8))
H_{sa} = 15.52 Btu/lb

Energy Recovered (QT) = 4.5 x cfm x ($H_{sa} – H_{oa}$)
QT = 4.5 x 3500 x (15.52 – (–.8))
QT = 257,040 Btuh
QT (kW) = 257,040/3413 = 75.3 kW

VI Evaluate need for frost protection.

Using the Frost Thresholds Temperatures table on page 56 and winter design conditions of 70 F and 30% RH indoor (return) air and –7 F outdoor air, determine the frost threshold temperature of –3 F. Since the outdoor-air temperature is below the frost threshold, some method of frost protection is required. Select electric preheat for this example. Refer to the application data section starting on page 54 for other methods, and see the Preheat Frost Control Temperatures and Capacity Requirements at Selected Indoor and Outdoor Conditions table on page 57.

VII Select electric preheat.

a. Determine required preheat temperature rise from the Preheat Frost Control Temperatures and Capacity (ΔT) Requirements table on page 57. For 70 F and 30% RH indoor air and –7 F outdoor temperature, interpolating in the table indicates that the preheat temperature design (temperature leaving preheater) should be 0° F, and the required capacity (rise) is 7 F.

b. Calculate preheat capacity required:
Required Reheat (Btuh) = 1.08 x cfm x ΔT (F)
Btuh = 1.08 x 3500 x 7
= 26,460 Btuh
Convert Btuh to kW: 26,460/3413 = 7.75 kW

c. Refer to the available electric heater options and select the 8 kW heater which meets or exceeds the 7.75 kW requirement.

VIII Select appropriate accessories to suit application.

See table below.

REQUIRED ACCESSORIES PER APPLICATION

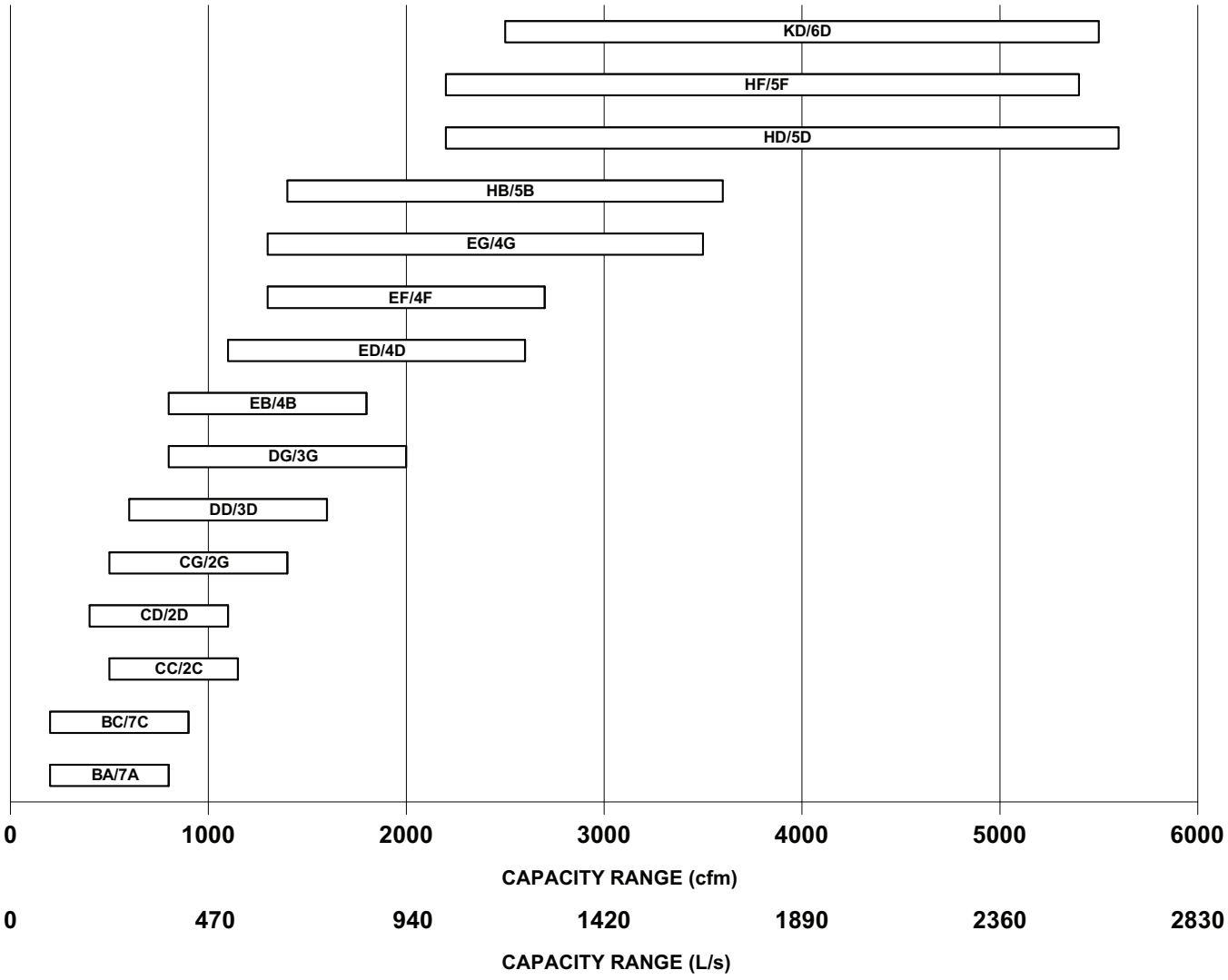
UNIT CONFIGURATION	APPLICATION			
RTU Configuration	Vertical		Horizontal	
ERV Configuration	Vertical	Vertical	Vertical	Horizontal
ERV to RTU Airflow	Contained with Combination Curb	Field-Supplied Duct, Under Roof	Factory Transitions, Above Roof	Factory Transitions, Above Roof
ACCESSORY	REQUIRED COMPONENTS			
Standard RTU Curb		X	X	X
Combination Curb	X			
Drop-In Damper Box		X		
ERV Curb		X		X
Horizontal Transition			X	X
Horizontal Base			X	

LEGEND

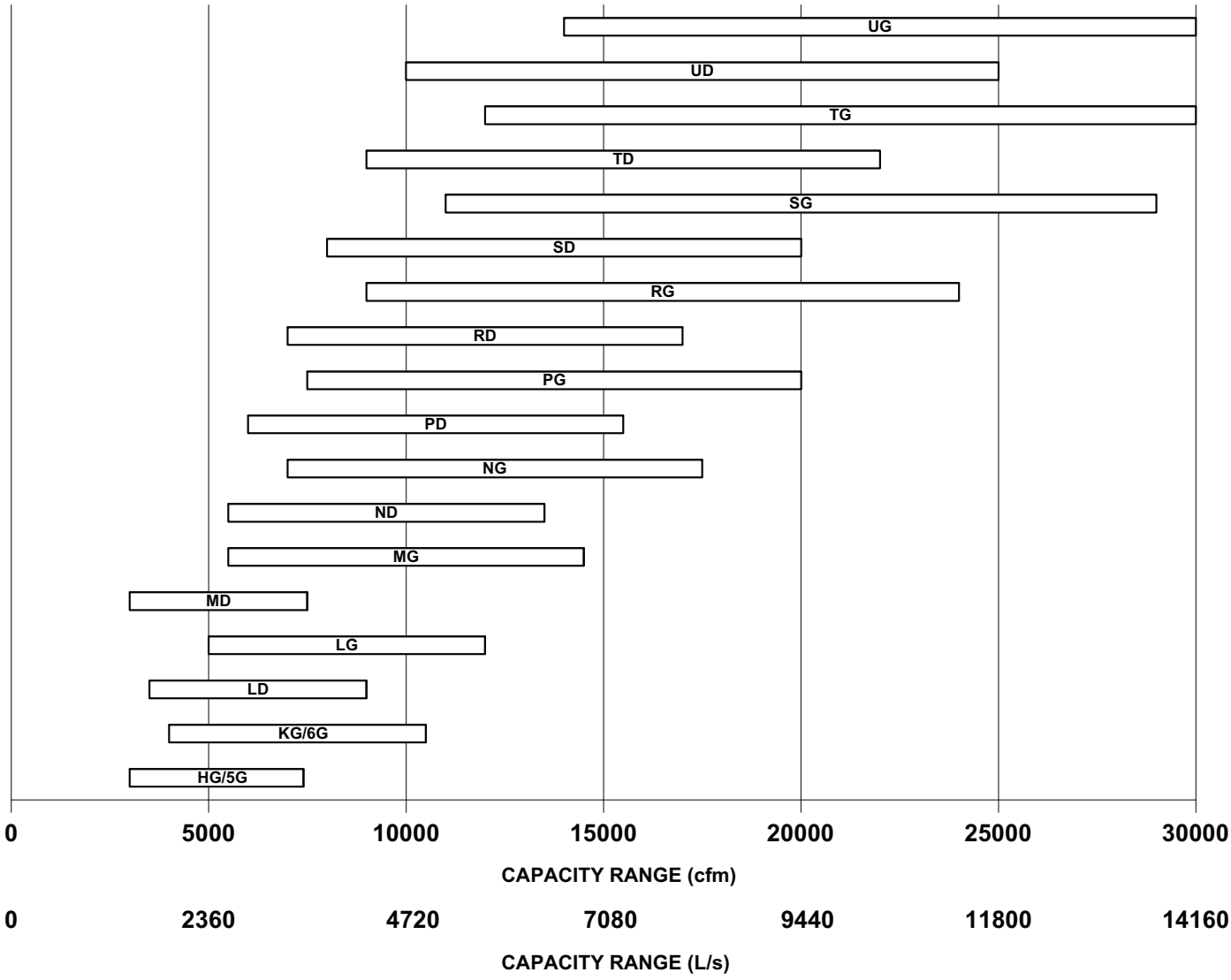
ERV — Energy Recovery Ventilator
RTU — Rooftop Unit

Performance data

ERV WHEEL CAPACITY RANGE — 94.4 to 2596 L/s (200 to 5500 CFM)



ERV WHEEL CAPACITY RANGE — 1,420 to 14,160 L/s (3,000 to 30,000 CFM)



Performance data (cont)

62EBA-62EDD ERV UNIT EFFECTIVENESS

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EBA and 62E7A	94	200	83.3	77.7	80.3	81.3
	118	250	81.0	74.2	77.2	78.6
	142	300	78.7	70.7	74.2	75.9
	165	350	76.4	67.2	71.2	73.2
	189	400	74.2	63.7	68.3	70.5
	212	450	71.9	60.3	65.3	67.8
	236	500	69.7	56.8	62.3	65.2
	260	550	67.4	53.3	59.3	62.5
	283	600	65.2	49.8	56.3	59.8
	307	650	62.9	46.3	53.3	57.1
	330	700	60.6	42.8	50.3	54.4
	354	750	58.4	39.3	47.2	51.7
	378	800	56.1	35.7	44.2	49.0
62EBC and 62E7C	94	200	80.1	72.1	75.7	77.3
	118	250	78.1	70.1	73.6	75.3
	142	300	76.1	68.1	71.6	73.2
	165	350	74.1	66.1	69.6	71.2
	189	400	72.1	64.1	67.7	69.2
	212	450	70.1	62.1	65.7	67.2
	236	500	68.1	60.1	63.7	65.2
	260	550	66.1	58.1	61.7	63.2
	283	600	64.1	56.1	59.7	61.2
	307	650	62.0	54.0	57.7	59.2
	330	700	60.0	52.0	55.7	57.2
	354	750	58.0	50.0	53.7	55.1
	378	800	55.9	47.9	51.6	53.1
	401	850	53.9	45.9	49.6	51.0
	425	900	51.8	43.8	47.5	49.0
62ECC and 62E2C	236	500	82.1	75.1	78.2	79.6
	260	550	80.9	73.9	77.0	78.4
	283	600	79.7	72.7	75.8	77.2
	307	650	78.5	71.5	74.6	76.0
	330	700	77.3	70.3	73.5	74.8
	354	750	76.1	69.1	72.3	73.6
	378	800	74.9	67.9	71.1	72.4
	401	850	73.7	66.7	69.9	71.2
	425	900	72.5	65.5	68.7	70.0
	448	950	71.3	64.3	67.5	68.8
	472	1,000	70.1	63.1	66.3	67.6
	495	1,050	68.9	61.9	65.1	66.4
	519	1,100	67.7	60.7	63.9	65.1
	543	1,150	66.5	59.4	62.7	63.9

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62ECD and 62E2D	189	400	86.1	78.1	81.6	83.3
	212	450	85.1	77.1	80.6	82.3
	236	500	84.1	76.1	79.6	81.3
	260	550	83.1	75.1	78.6	80.3
	283	600	82.2	74.1	77.6	79.3
	307	650	81.2	73.1	76.6	78.3
	330	700	80.2	72.1	75.6	77.3
	354	750	79.2	71.1	74.7	76.3
	378	800	78.1	70.1	73.7	75.3
	401	850	77.1	69.1	72.7	74.3
	425	900	76.1	68.1	71.7	73.3
	448	950	75.1	67.1	70.6	72.2
	472	1,000	74.0	66.1	69.6	71.2
	495	1,050	73.0	65.1	68.6	70.2
	519	1,100	72.0	64.0	67.6	69.1
62ECG and 62E2G	236	500	77.7	74.4	76.1	76.5
	260	550	76.9	73.2	75.1	75.5
	283	600	76.1	72.1	74.1	74.6
	307	650	75.2	70.9	73.1	73.7
	330	700	74.4	69.8	72.0	72.7
	354	750	73.6	68.6	71.0	71.8
	378	800	72.8	67.4	70.0	70.8
	401	850	71.9	66.3	68.9	69.9
	425	900	71.1	65.1	67.9	68.9
	448	950	70.3	63.9	66.9	68.0
	472	1,000	69.4	62.8	65.8	67.0
	495	1,050	68.6	61.6	64.8	66.1
	519	1,100	67.7	60.4	63.8	65.1
	543	1,150	66.9	59.2	62.7	64.2
	566	1,200	66.1	58.0	61.7	63.2
	590	1,250	65.2	56.9	60.6	62.2
	613	1,300	64.4	55.7	59.6	61.3
	637	1,350	63.5	54.5	58.5	60.3
	661	1,400	62.7	53.3	57.5	59.3
62EDD and 62E3D	283	600	85.8	77.8	81.3	83.0
	330	700	84.5	76.5	80.0	81.6
	378	800	83.1	75.1	78.6	80.3
	425	900	81.8	73.7	77.3	78.9
	472	1,000	80.4	72.4	75.9	77.6
	519	1,100	79.0	71.0	74.5	76.2
	566	1,200	77.7	69.6	73.2	74.8
	613	1,300	76.3	68.3	71.8	73.4
	661	1,400	74.9	66.9	70.4	72.0
	708	1,500	73.5	65.5	69.1	70.6
	755	1,600	72.1	64.1	67.7	69.2

62EDG-62EEG ERV UNIT EFFECTIVENESS

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EDG and 62E3G	378	800	77.0	73.3	75.2	75.6
	425	900	75.8	71.7	73.7	74.3
	472	1,000	74.7	70.1	72.3	73.0
	519	1,100	73.5	68.5	70.9	71.7
	566	1,200	72.4	66.9	69.5	70.4
	613	1,300	71.2	65.3	68.1	69.1
	661	1,400	70.1	63.7	66.7	67.8
	708	1,500	68.9	62.1	65.3	66.5
	755	1,600	67.8	60.5	63.8	65.2
	802	1,700	66.6	58.9	62.4	63.9
	849	1,800	65.5	57.2	61.0	62.5
	897	1,900	64.3	55.6	59.5	61.2
	944	2,000	63.1	54.0	58.1	59.9
62EEB and 62E4B	378	800	85.2	80.6	82.8	83.6
	425	900	84.3	79.2	81.6	82.5
	472	1,000	83.5	77.8	80.4	81.5
	519	1,100	82.7	76.4	79.2	80.4
	566	1,200	81.8	74.9	78.0	79.4
	613	1,300	80.9	73.5	76.8	78.3
	661	1,400	80.1	72.1	75.6	77.3
	708	1,500	79.2	70.7	74.4	76.2
	755	1,600	78.4	69.2	73.2	75.1
	802	1,700	77.5	67.8	72.0	74.1
	849	1,800	76.6	66.3	70.8	73.0
62EED and 62E4D	519	1,100	83.2	78.9	80.6	81.6
	566	1,200	82.4	77.9	79.7	80.8
	613	1,300	81.6	76.9	78.8	79.9
	661	1,400	80.9	76.0	77.9	79.1
	708	1,500	80.1	75.0	77.0	78.2
	755	1,600	79.3	74.0	76.1	77.4
	802	1,700	78.5	73.0	75.2	76.5
	849	1,800	77.7	72.1	74.3	75.7
	897	1,900	76.9	71.1	73.4	74.8
	944	2,000	76.1	70.1	72.5	74.0
	991	2,100	75.3	69.1	71.6	73.1
	1038	2,200	74.5	68.1	70.7	72.2
	1085	2,300	73.7	67.2	69.8	71.4
	1133	2,400	72.9	66.2	68.9	70.5
	1180	2,500	72.1	65.2	67.9	69.6
	1227	2,600	71.3	64.2	67.0	68.8

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EEF and 62E4F	613	1,300	78.0	70.0	73.6	75.2
	661	1,400	76.9	68.9	72.5	74.1
	708	1,500	75.8	67.8	71.4	73.0
	755	1,600	74.7	66.7	70.3	71.9
	802	1,700	73.7	65.7	69.2	70.8
	849	1,800	72.6	64.6	68.1	69.7
	897	1,900	71.5	63.5	67.1	68.6
	944	2,000	70.4	62.4	66.0	67.5
	991	2,100	69.3	61.3	64.9	66.4
	1038	2,200	68.2	60.2	63.8	65.3
	1085	2,300	67.0	59.1	62.7	64.2
	1133	2,400	65.9	57.9	61.6	63.1
	1180	2,500	64.8	56.8	60.5	62.0
	1227	2,600	63.7	55.7	59.4	60.9
	1274	2,700	62.6	54.6	58.2	59.7
62EEG and 62E4G	613	1,300	79.4	74.7	76.7	77.7
	661	1,400	78.5	73.5	75.5	76.7
	708	1,500	77.6	72.4	74.5	75.7
	755	1,600	76.7	71.2	73.4	74.7
	802	1,700	75.8	70.1	72.4	73.7
	849	1,800	74.9	68.9	71.3	72.7
	897	1,900	74.0	67.8	70.3	71.7
	944	2,000	73.1	66.6	69.2	70.7
	991	2,100	72.2	65.5	68.1	69.8
	1038	2,200	71.3	64.3	67.1	68.8
	1085	2,300	70.4	63.2	66.0	67.8
	1133	2,400	69.5	62.0	65.0	66.8
	1180	2,500	68.6	60.9	63.9	65.8
	1227	2,600	67.6	59.7	62.9	64.8
	1274	2,700	66.7	58.6	61.8	63.8
	1321	2,800	65.8	57.4	60.7	62.8
	1369	2,900	64.9	56.2	59.7	61.8
	1416	3,000	64.0	55.1	58.6	60.8
	1463	3,100	63.1	53.9	57.5	59.8
	1510	3,200	62.2	52.7	56.5	58.8
	1557	3,300	61.3	51.6	55.4	57.8
	1604	3,400	60.4	50.4	54.3	56.8
	1652	3,500	59.4	49.2	53.3	55.8

Performance data (cont)

62EHB-62EKG ERV UNIT EFFECTIVENESS

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EHB and 62E5B	661	1,400	86.2	82.5	84.3	84.9
	755	1,600	85.5	81.1	83.2	83.9
	849	1,800	84.7	79.8	82.1	82.9
	944	2,000	83.9	78.5	81.0	82.0
	1038	2,200	83.1	77.1	79.9	81.0
	1133	2,400	82.3	75.8	78.7	80.0
	1227	2,600	81.5	74.5	77.6	79.0
	1321	2,800	80.7	73.1	76.5	78.0
	1416	3,000	79.9	71.8	75.3	77.0
	1510	3,200	79.1	70.4	74.2	76.0
	1604	3,400	78.2	69.0	73.0	75.0
	1699	3,600	77.4	67.7	71.9	74.0
62EHD and 62E5D	1038	2,200	83.7	79.7	81.3	82.2
	1133	2,400	83.0	78.7	80.4	81.4
	1227	2,600	82.2	77.8	79.6	80.6
	1321	2,800	81.5	76.9	78.8	79.8
	1416	3,000	80.7	76.0	77.9	79.0
	1510	3,200	80.0	75.1	77.1	78.2
	1604	3,400	79.2	74.2	76.2	77.4
	1699	3,600	78.5	73.3	75.4	76.6
	1793	3,800	77.7	72.4	74.6	75.8
	1888	4,000	77.0	71.5	73.7	75.0
	1982	4,200	76.2	70.6	72.9	74.2
	2076	4,400	75.5	69.7	72.0	73.4
	2171	4,600	74.7	68.8	71.2	72.6
	2265	4,800	74.0	67.9	70.3	71.8
	2360	5,000	73.2	66.9	69.5	71.0
	2454	5,200	72.5	66.0	68.6	70.2
	2548	5,400	71.7	65.1	67.8	69.3
	2643	5,600	71.0	64.2	66.9	68.5
62EHF and 62E5F	1038	2,200	80.8	72.8	76.3	78.0
	1133	2,400	79.8	71.8	75.3	76.9
	1227	2,600	78.7	70.7	74.3	75.9
	1321	2,800	77.7	69.7	73.2	74.9
	1416	3,000	76.7	68.7	72.2	73.8
	1510	3,200	75.6	67.6	71.2	72.8
	1604	3,400	74.6	66.6	70.2	71.8
	1699	3,600	73.6	65.6	69.1	70.7
	1793	3,800	72.5	64.5	68.1	69.7
	1888	4,000	71.5	63.5	67.1	68.6
	1982	4,200	70.5	62.4	66.0	67.6
	2076	4,400	69.4	61.4	65.0	66.5
	2171	4,600	68.4	60.3	64.0	65.5
	2265	4,800	67.3	59.3	62.9	64.4
	2360	5,000	66.3	58.2	61.9	63.4
	2454	5,200	65.2	57.2	60.8	62.3
	2548	5,400	64.1	56.1	59.8	61.3

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EHG and 62E5G	1416	3,000	78.3	73.3	75.3	76.5
	1510	3,200	77.5	72.3	74.3	75.6
	1604	3,400	76.6	71.2	73.3	74.6
	1699	3,600	75.8	70.1	72.4	73.7
	1793	3,800	74.9	69.0	71.4	72.8
	1888	4,000	74.1	67.9	70.4	71.8
	1982	4,200	73.2	66.8	69.4	70.9
	2076	4,400	72.4	65.7	68.4	70.0
	2171	4,600	71.5	64.7	67.4	69.0
	2265	4,800	70.7	63.6	66.4	68.1
	2360	5,000	69.8	62.5	65.4	67.2
	2454	5,200	68.9	61.4	64.4	66.2
	2548	5,400	68.1	60.3	63.4	65.3
	2643	5,600	67.2	59.2	62.4	64.4
	2737	5,800	66.4	58.1	61.4	63.4
	2831	6,000	65.5	57.0	60.4	62.5
	2926	6,200	64.7	55.9	59.4	61.6
	3020	6,400	63.8	54.8	58.4	60.6
	3115	6,600	62.9	53.7	57.4	59.7
	3209	6,800	62.1	52.6	56.4	58.7
	3303	7,000	61.2	51.5	55.4	57.8
	3398	7,200	60.4	50.4	54.3	56.8
	3492	7,400	59.5	49.3	53.3	55.9
62EKD and 62E6D	1180	2,500	87.3	82.3	84.2	85.5
	1416	3,000	86.0	81.0	83.0	84.2
	1652	3,500	84.7	79.7	81.7	82.9
	1888	4,000	83.4	78.4	80.4	81.6
	2124	4,500	82.1	77.1	79.1	80.3
	2360	5,000	80.7	75.7	77.7	78.9
	2595	5,500	79.4	74.4	76.4	77.6
62EKG and 62E6G	1888	4,000	79.2	74.5	76.4	77.5
	2124	4,500	77.7	72.6	74.7	75.9
	2360	5,000	76.2	70.7	72.9	74.2
	2595	5,500	74.7	68.8	71.2	72.6
	2831	6,000	73.3	66.9	69.5	71.0
	3067	6,500	71.8	65.0	67.7	69.4
	3303	7,000	70.3	63.1	66.0	67.7
	3539	7,500	68.8	61.2	64.2	66.1
	3775	8,000	67.3	59.3	62.5	64.4
	4011	8,500	65.8	57.4	60.7	62.8
	4247	9,000	64.3	55.5	59.0	61.1
	4483	9,500	62.8	53.6	57.2	59.5
	4719	10,000	61.3	51.6	55.4	57.8
	4955	10,500	59.7	49.7	53.7	56.2

62ELD-62ENG ERV UNIT EFFECTIVENESS

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62ELD	1652	3,500	84.0	80.0	81.7	82.6
	1888	4,000	82.9	78.7	80.4	81.4
	2124	4,500	81.8	77.3	79.1	80.2
	2360	5,000	80.7	75.9	77.8	79.0
	2595	5,500	79.5	74.6	76.6	77.7
	2831	6,000	78.4	73.2	75.3	76.5
	3067	6,500	77.3	71.9	74.0	75.3
	3303	7,000	76.2	70.5	72.8	74.1
	3539	7,500	75.0	69.1	71.5	72.9
	3775	8,000	73.9	67.7	70.2	71.7
	4011	8,500	72.8	66.3	68.9	70.4
	4247	9,000	71.6	65.0	67.6	69.2
62ELG	2360	5,000	78.2	73.2	75.2	76.4
	2595	5,500	76.9	71.6	73.7	75.0
	2831	6,000	75.6	70.0	72.2	73.6
	3067	6,500	74.3	68.3	70.7	72.2
	3303	7,000	73.0	66.7	69.2	70.8
	3539	7,500	71.8	65.0	67.7	69.3
	3775	8,000	70.5	63.4	66.2	67.9
	4011	8,500	69.2	61.8	64.7	66.5
	4247	9,000	67.9	60.1	63.2	65.1
	4483	9,500	66.6	58.5	61.7	63.7
	4719	10,000	65.3	56.8	60.2	62.3
	4955	10,500	64.0	55.2	58.7	60.8
	5191	11,000	62.7	53.5	57.1	59.4
	5427	11,500	61.4	51.8	55.6	58.0
	5663	12,000	60.1	50.2	54.1	56.6
62EMD	1416	3,000	87.9	82.9	84.9	86.1
	1652	3,500	86.9	82.0	83.9	85.2
	1888	4,000	86.0	81.0	83.0	84.2
	2124	4,500	85.1	80.1	82.1	83.3
	2360	5,000	84.1	79.2	81.1	82.3
	2595	5,500	83.2	78.2	802.0	81.4
	2831	6,000	82.2	77.2	79.2	80.4
	3067	6,500	81.2	76.3	78.3	79.5
	3303	7,000	80.3	75.3	77.3	78.5
	3539	7,500	79.3	76.3	76.3	77.5
62EMG	2595	5,500	79.4	74.4	76.4	77.6
	2831	6,000	78.3	73.0	75.1	76.4
	3067	6,500	77.2	71.6	73.8	75.2
	3303	7,000	76.1	70.2	72.6	74.0
	3539	7,500	75.0	68.8	71.3	72.8
	3775	8,000	74.0	67.4	70.0	71.6
	4011	8,500	72.9	66.0	68.7	70.4
	4247	9,000	71.8	64.6	67.5	69.2
	4483	9,500	70.7	63.2	66.2	68.0
	4719	10,000	69.6	61.9	64.9	66.8
	4955	10,500	68.5	60.5	63.6	65.6
	5191	11,000	67.4	59.1	62.4	64.4
	5427	11,500	66.3	57.7	61.1	63.2
	5663	12,000	65.2	56.3	59.8	62.0
	5899	12,500	64.1	54.9	58.5	60.8
	6135	13,000	63.0	53.5	57.2	59.6
	6371	13,500	61.9	52.0	55.9	58.4
	6607	14,000	60.8	50.6	54.6	57.2
	6843	14,500	59.7	49.2	53.3	56.0

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62END	2595	5,500	83.3	79.2	80.9	81.8
	2831	6,000	82.5	78.3	80.0	81.0
	3067	6,500	81.8	77.3	79.1	80.2
	3303	7,000	81.0	76.4	78.2	79.3
	3539	7,500	80.2	75.4	77.4	78.5
	3775	8,000	79.4	74.5	76.5	77.7
	4011	8,500	78.7	73.6	75.6	76.8
	4247	9,000	77.9	72.6	74.7	76.0
	4483	9,500	77.1	71.7	73.8	75.1
	4719	10,000	76.3	70.7	73.0	74.3
	4955	10,500	75.5	69.8	72.1	73.5
	5191	11,000	74.7	68.8	71.2	72.6
	5427	11,500	74.0	67.9	70.3	71.8
	5663	12,000	73.2	66.9	69.4	70.9
	5899	12,500	72.4	66.0	68.5	70.1
	6135	13,000	71.6	65.0	67.6	69.2
	6371	13,500	70.8	64.0	66.7	68.4
62ENG	3303	7,000	78.7	73.8	75.8	76.9
	3539	7,500	77.8	72.7	74.7	75.9
	3775	8,000	76.9	71.5	73.7	74.9
	4011	8,500	76.0	70.4	72.6	74.0
	4247	9,000	75.1	69.3	71.6	73.0
	4483	9,500	74.2	68.1	70.6	72.0
	4719	10,000	73.3	67.0	69.5	71.1
	4955	10,500	72.4	65.9	68.5	70.1
	5191	11,000	71.5	64.7	67.5	69.1
	5427	11,500	70.7	63.6	66.4	68.1
	5663	12,000	69.8	62.5	65.4	67.2
	5899	12,500	68.9	61.3	64.3	66.2
	6135	13,000	68.0	60.2	63.3	65.2
	6371	13,500	67.1	59.1	62.3	64.2
	6607	14,000	66.2	57.9	61.2	63.3
	6843	14,500	65.3	56.8	60.2	62.3
	7079	15,000	64.4	55.6	59.1	61.3
	7314	15,500	63.5	54.5	58.1	60.3
	7550	16,000	62.6	53.4	57.0	59.3
	7786	16,500	61.7	52.2	56.0	58.3
	8022	17,000	60.8	51.1	54.9	57.4
	8258	17,500	59.9	49.9	53.9	56.4

Performance data (cont)

62EPD-62ESD ERV UNIT EFFECTIVENESS

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EPD	2831	6,000	83.7	79.7	81.3	82.2
	3067	6,500	83.0	78.8	80.5	81.5
	3303	7,000	82.3	78.0	79.8	80.8
	3539	7,500	81.7	77.2	79.0	80.0
	3775	8,000	81.0	76.4	78.2	79.3
	4011	8,500	80.3	75.5	77.5	78.6
	4247	9,000	79.6	74.7	76.7	77.8
	4483	9,500	78.9	73.9	75.9	77.1
	4719	10,000	78.3	73.1	75.1	76.4
	4955	10,500	77.6	72.2	74.4	75.6
	5191	11,000	76.9	71.4	73.6	74.9
	5427	11,500	76.2	70.6	72.8	74.2
	5663	12,000	75.5	69.7	72.1	73.4
	5899	12,500	74.8	68.9	71.3	72.7
	6135	13,000	74.1	68.1	70.5	72.0
	6371	13,500	73.4	67.2	69.7	71.2
	6607	14,000	72.8	66.4	68.9	70.5
	6843	14,500	72.1	65.6	68.1	69.7
	7079	15,000	71.4	64.7	67.4	69.0
	7314	15,500	70.7	63.9	66.6	68.2
62EPG	3539	7,500	79.4	74.7	76.6	77.7
	3775	8,000	78.6	73.7	75.7	76.9
	4011	8,500	77.9	72.7	74.8	76.0
	4247	9,000	77.1	71.7	73.9	75.1
	4483	9,500	76.3	70.7	73.0	74.3
	4719	10,000	75.5	69.8	72.1	73.4
	4955	10,500	74.7	68.8	71.2	72.6
	5191	11,000	74.0	67.8	70.2	71.7
	5427	11,500	73.2	66.8	69.3	70.9
	5663	12,000	72.4	65.8	68.4	70.0
	5899	12,500	71.6	64.8	67.5	69.2
	6135	13,000	70.9	63.8	66.6	68.3
	6371	13,500	70.1	62.8	65.7	67.5
	6607	14,000	69.3	61.8	64.8	66.6
	6843	14,500	68.5	60.8	63.9	65.8
	7079	15,000	67.7	59.8	62.9	64.9
	7314	15,500	66.9	58.8	62.0	64.0
	7550	16,000	66.2	57.8	61.1	63.2
	7786	16,500	65.4	56.8	60.2	62.3
	8022	17,000	64.6	55.8	59.3	61.5
	8258	17,500	63.8	54.8	58.4	60.6
	8494	18,000	63.0	53.8	57.4	59.7
	8730	18,500	62.2	52.8	56.5	58.9
	8966	19,000	61.4	51.8	55.6	58.0
	9202	19,500	60.7	50.8	54.7	57.1
	9438	20,000	59.9	49.7	53.7	56.3

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62ERD	3303	7,000	83.9	78.9	81.3	82.1
	3775	8,000	82.5	77.8	80.0	80.8
	4247	9,000	81.0	76.6	78.7	79.4
	4719	10,000	79.6	75.5	77.5	78.1
	5191	11,000	78.1	74.3	76.2	76.7
	5663	12,000	76.7	73.1	75.0	75.3
	6135	13,000	75.2	72.0	73.7	74.0
	6607	14,000	73.7	70.8	72.4	72.6
	7079	15,000	72.3	69.6	71.1	71.2
	7550	16,000	70.8	68.4	69.8	69.9
	8022	17,000	69.3	67.3	68.5	68.5
62ERG	4247	9,000	76.7	70.7	73.5	74.6
	4719	10,000	75.1	69.3	72.0	73.0
	5191	11,000	73.5	68.0	70.6	71.5
	5663	12,000	71.9	66.6	69.2	70.0
	6135	13,000	70.3	65.2	67.7	68.5
	6607	14,000	68.7	63.9	66.3	66.9
	7079	15,000	67.1	62.5	64.8	65.4
	7550	16,000	65.5	61.1	63.4	63.9
	8022	17,000	63.9	59.7	61.9	62.4
	8494	18,000	62.3	58.3	60.4	60.8
	8966	19,000	60.7	57.0	59.0	59.3
	9438	20,000	59.1	55.6	57.5	57.8
	9910	21,000	57.5	54.2	56.0	56.2
	10382	22,000	55.9	52.8	54.6	54.7
	10854	23,000	54.3	51.4	53.1	53.1
	11326	24,000	52.6	50.0	51.6	51.6
62ESD	3775	8,000	84.3	79.3	81.6	82.5
	4247	9,000	83.1	78.3	80.6	81.4
	4719	10,000	81.9	77.4	79.5	80.3
	5191	11,000	80.7	76.4	78.5	79.1
	5663	12,000	79.5	75.4	77.4	78.0
	6135	13,000	78.3	74.5	76.4	76.9
	6607	14,000	77.1	73.5	75.3	75.7
	7079	15,000	75.8	72.5	74.3	74.6
	7550	16,000	74.6	71.5	73.2	73.5
	8022	17,000	73.4	70.6	72.1	72.3
	8494	18,000	72.1	69.6	71.1	71.2
	8966	19,000	70.9	68.6	70.0	70.0
	9438	20,000	69.7	67.6	68.9	68.8

62ESG-62EUG ERV UNIT EFFECTIVENESS

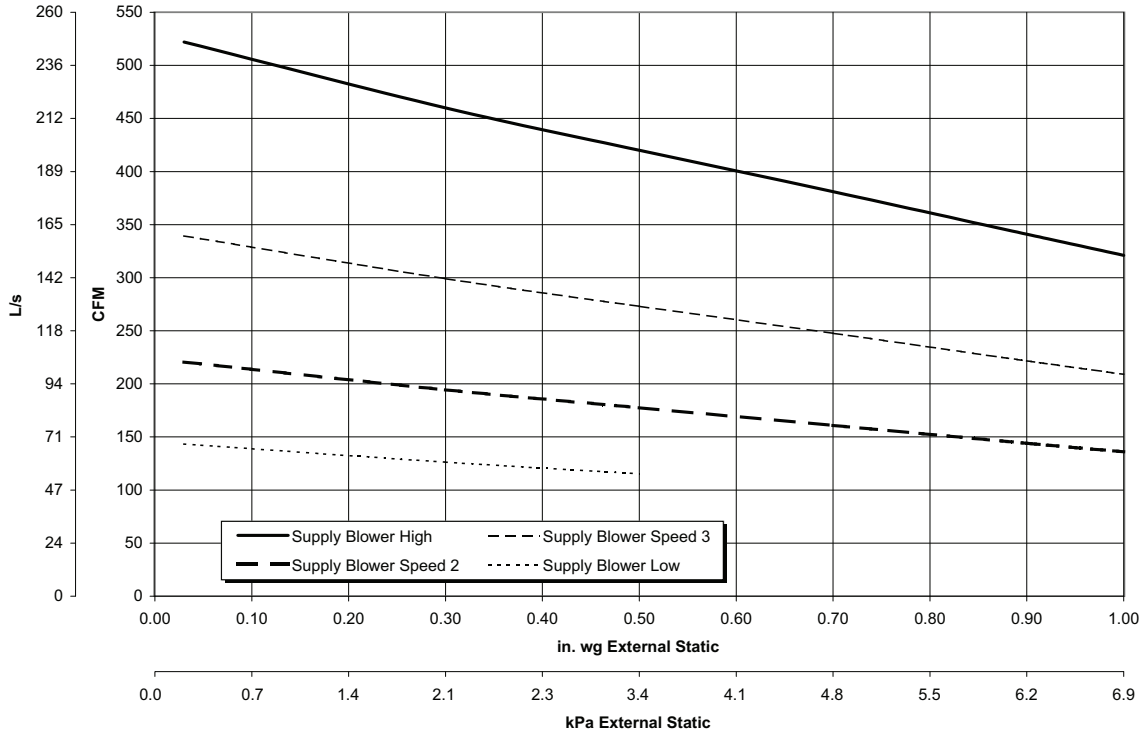
ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62ESG	5,191	11,000	76.4	70.5	73.2	74.2
	5,663	12,000	75.0	69.3	72.0	73.0
	6,135	13,000	73.7	68.2	70.8	71.7
	6,607	14,000	72.3	67.0	69.6	70.4
	7,079	15,000	71.0	65.9	68.4	69.1
	7,550	16,000	69.7	64.8	67.2	67.9
	8,022	17,000	68.3	63.6	65.9	66.6
	8,494	18,000	67.0	62.5	64.7	65.3
	8,966	19,000	65.6	61.3	63.5	64.0
	9,438	20,000	64.3	60.2	62.3	62.7
	9,910	21,000	62.9	59.0	61.1	61.5
	10,382	22,000	61.6	57.9	59.9	60.2
	10,854	23,000	60.2	56.7	58.6	58.9
	11,326	24,000	58.9	55.5	57.4	57.6
	11,798	25,000	57.5	54.4	56.2	56.3
	12,269	26,000	56.2	53.2	54.9	55.0
	12,741	27,000	54.8	52.1	53.7	53.7
	13,213	28,000	53.4	50.9	52.5	52.4
	13,685	29,000	52.1	49.7	51.2	51.1
62ETD	4,247	9,000	84.0	79.0	81.3	82.2
	4,719	10,000	82.9	78.1	80.3	81.1
	5,191	11,000	81.8	77.2	79.4	80.1
	5,663	12,000	80.6	76.3	78.4	79.1
	6,135	13,000	79.5	75.4	77.4	78.0
	6,607	14,000	78.4	74.5	76.5	77.0
	7,079	15,000	77.3	73.6	75.5	75.9
	7,550	16,000	76.2	72.7	74.5	74.9
	8,022	17,000	75.0	71.8	73.5	73.8
	8,494	18,000	73.9	70.9	72.5	72.8
	8,966	19,000	72.8	70.0	71.5	71.7
	9,438	20,000	71.6	69.1	70.5	70.6
	9,910	21,000	70.5	68.1	69.5	69.6
	10,382	22,000	69.3	67.2	68.5	68.5
62ETG	5,663	12,000	76.3	70.4	73.1	74.1
	6,135	13,000	75.0	69.3	72.0	73.0
	6,607	14,000	73.8	68.3	70.9	71.8
	7,079	15,000	72.5	67.2	69.8	70.6
	7,550	16,000	71.3	66.2	68.6	69.4
	8,022	17,000	70.1	65.1	67.5	68.3
	8,494	18,000	68.8	64.0	66.4	67.1
	8,966	19,000	67.6	63.0	65.3	65.9
	9,438	20,000	66.4	61.9	64.2	64.7
	9,910	21,000	65.1	60.9	63.0	63.5
	10,382	22,000	63.9	59.8	61.9	62.4
	10,854	23,000	62.6	58.7	60.8	61.2
	11,326	24,000	61.4	57.7	59.7	60.0
	11,798	25,000	60.1	56.6	58.5	58.8
	12,269	26,000	58.9	55.5	57.4	57.6
	12,741	27,000	57.6	54.5	56.3	56.4
	13,213	28,000	56.4	53.4	55.1	55.2
	13,685	29,000	55.1	52.3	54.0	54.0
	14,157	30,000	53.9	51.2	52.9	52.8

ERV UNIT	L/s	CFM	EFFECTIVENESS (%)			
			Sensible	Latent	TC	TH
62EUD	4,719	10,000	84.3	79.2	81.6	82.5
	5,191	11,000	83.3	78.4	80.7	81.5
	5,663	12,000	82.3	77.6	79.8	80.6
	6,135	13,000	81.4	76.8	79.0	79.7
	6,607	14,000	80.4	76.0	78.1	78.8
	7,079	15,000	79.4	75.3	77.3	77.9
	7,550	16,000	78.4	74.5	76.4	77.0
	8,022	17,000	77.5	73.7	75.6	76.1
	8,494	18,000	76.5	72.9	74.7	75.1
	8,966	19,000	75.5	72.1	73.9	74.2
	9,438	20,000	74.5	71.3	73.0	73.3
	9,910	21,000	73.5	70.5	72.1	72.4
	10,382	22,000	72.5	69.7	71.3	71.4
	10,854	23,000	71.5	68.9	70.4	70.5
	11,326	24,000	70.5	68.1	69.5	69.6
	11,798	25,000	69.5	67.3	68.7	68.6
62EUG	6,607	14,000	76.0	70.2	72.9	73.9
	7,079	15,000	75.0	69.3	71.9	72.9
	7,550	16,000	73.9	68.4	71.0	71.9
	8,022	17,000	72.8	67.4	70.0	70.9
	8,494	18,000	71.7	66.5	69.0	69.8
	8,966	19,000	70.7	65.6	68.1	68.8
	9,438	20,000	69.6	64.7	67.1	67.8
	9,910	21,000	68.5	63.8	66.1	66.8
	10,382	22,000	67.4	62.8	65.1	65.7
	10,854	23,000	66.4	61.9	64.2	64.7
	11,326	24,000	65.3	61.0	63.2	63.7
	11,798	25,000	64.2	60.1	62.2	62.7
	12,269	26,000	63.1	59.1	61.2	61.6
	12,741	27,000	62.0	58.2	60.3	60.6
	13,213	28,000	61.0	57.3	59.3	59.6
	13,685	29,000	59.9	56.4	58.3	58.5
	14,157	30,000	58.8	55.4	57.3	57.5

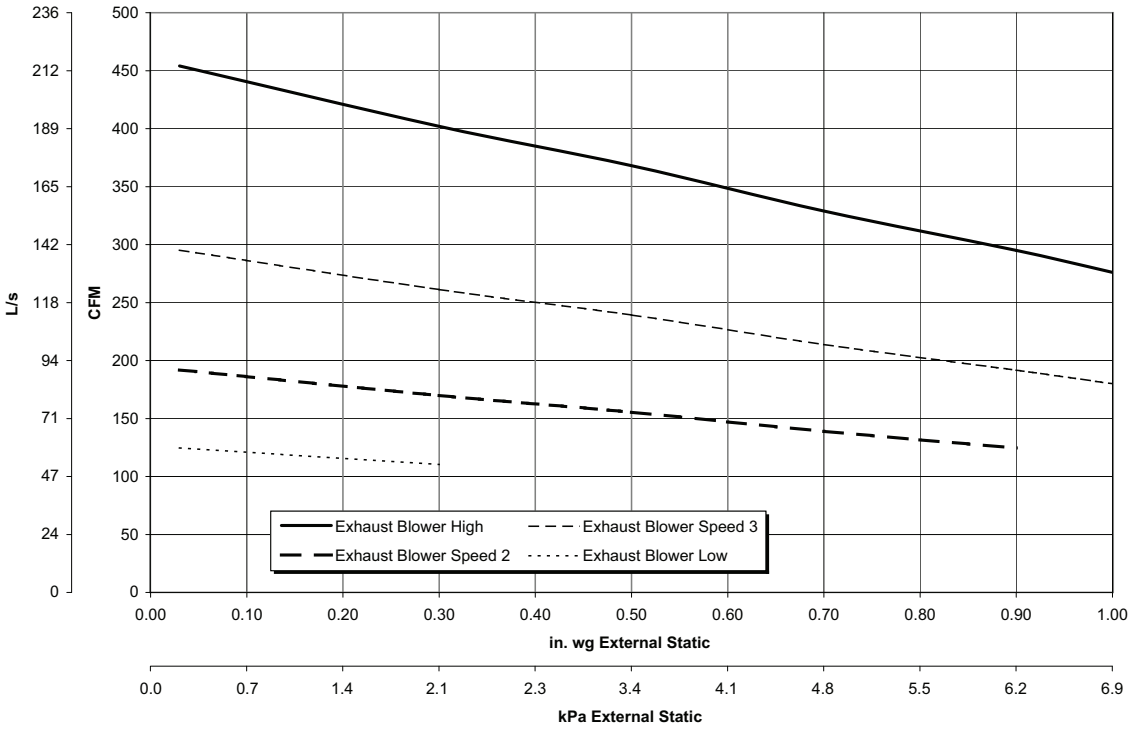
Performance data (cont)

FAN PERFORMANCE CURVES

62EBA, 62E7A, 62EBC, 62E7C — A SUPPLY FAN

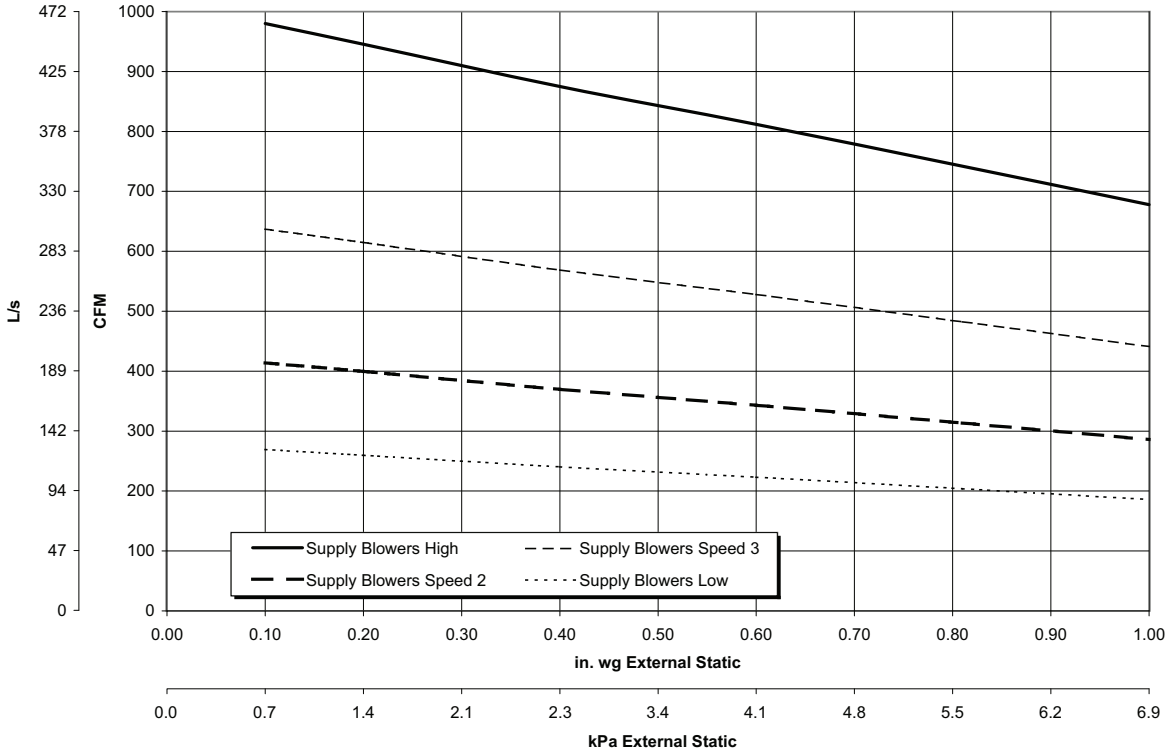


62EBA, 62E7A, 62EBC, 62E7C — A EXHAUST FAN

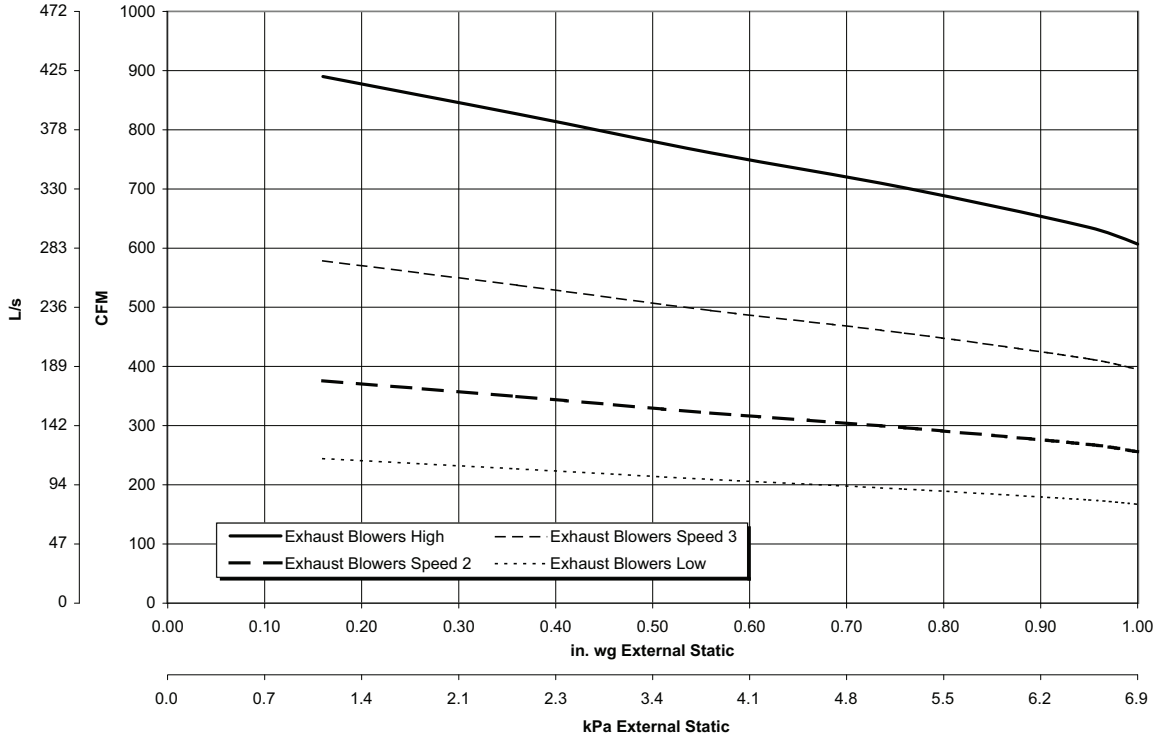


FAN PERFORMANCE CURVES (cont)

62EBC, 62E7C — B SUPPLY FAN



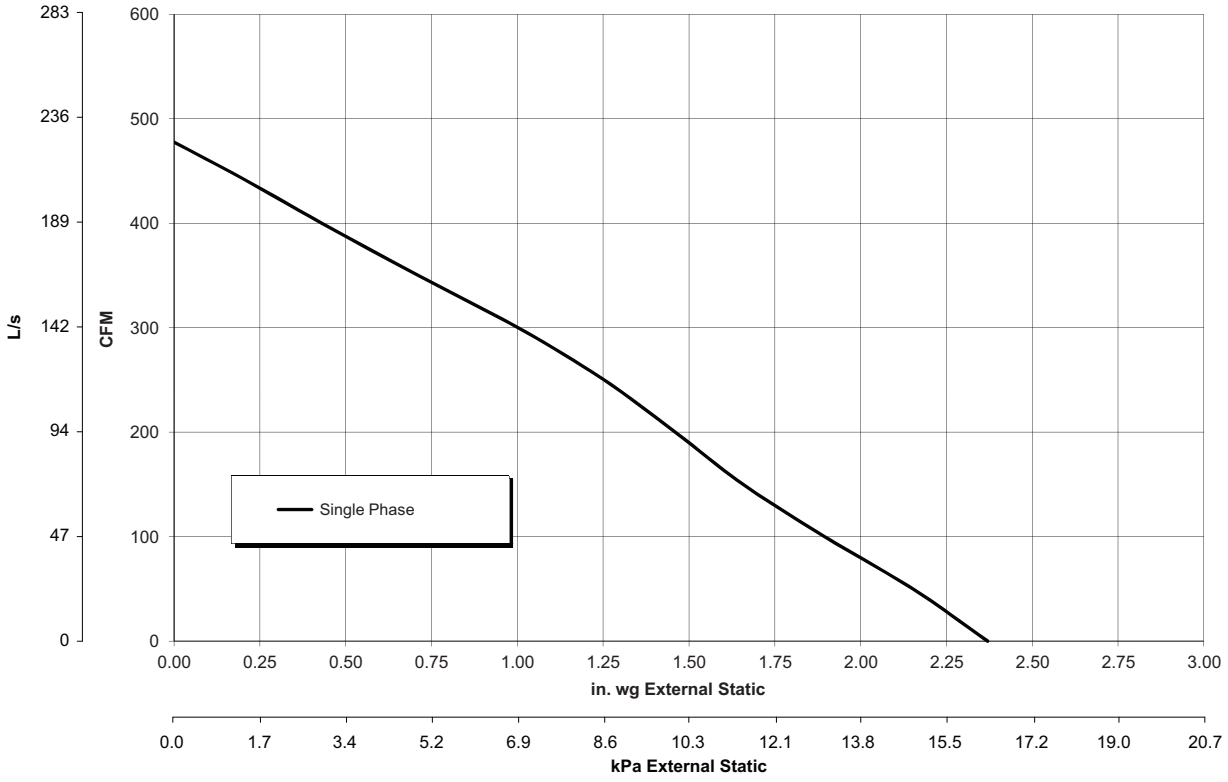
62EBC, 62E7C — B EXHAUST FAN



Performance data (cont)

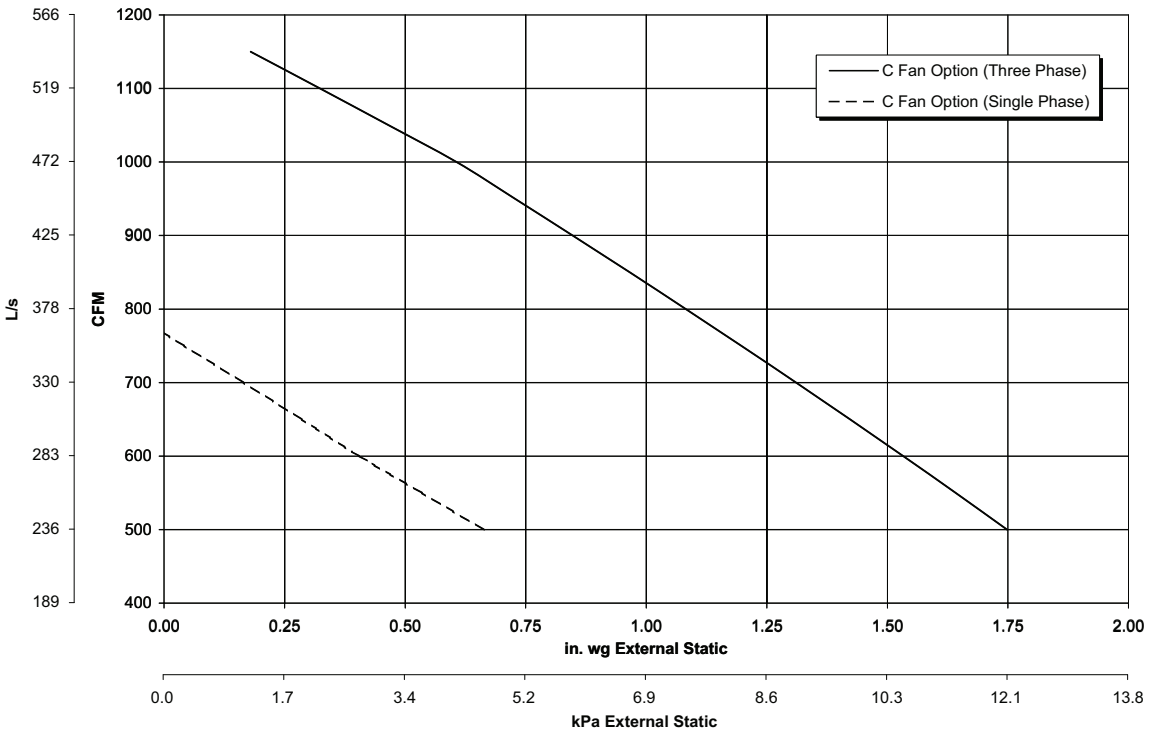
FAN PERFORMANCE CURVES (cont)

62EBS,62E7S

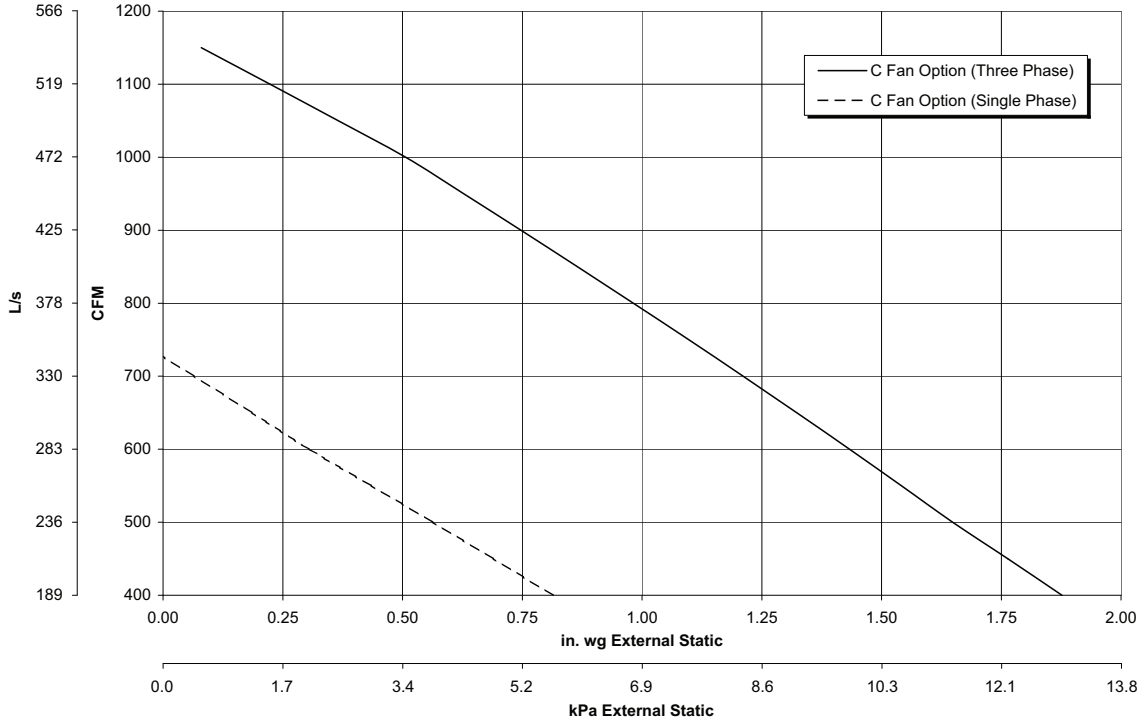


FAN PERFORMANCE CURVES (cont)

62ECC, 62E2C



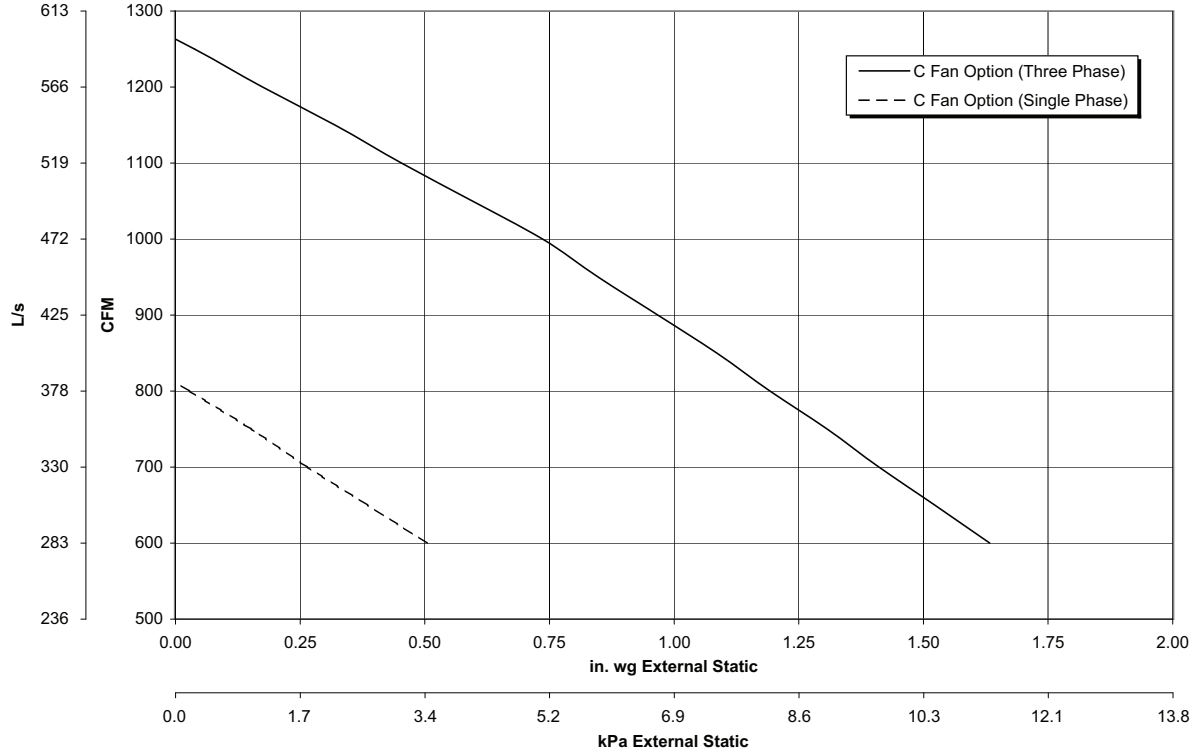
62ECD, 62E2D



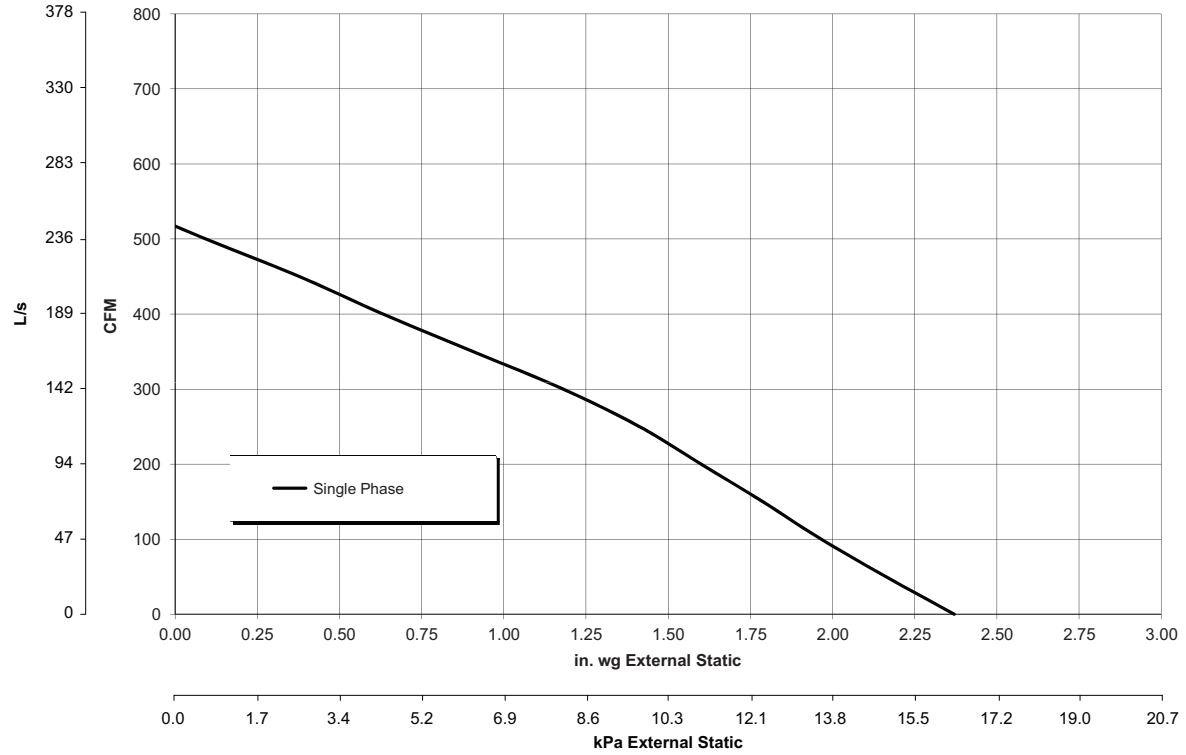
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62ECG, 62E2G

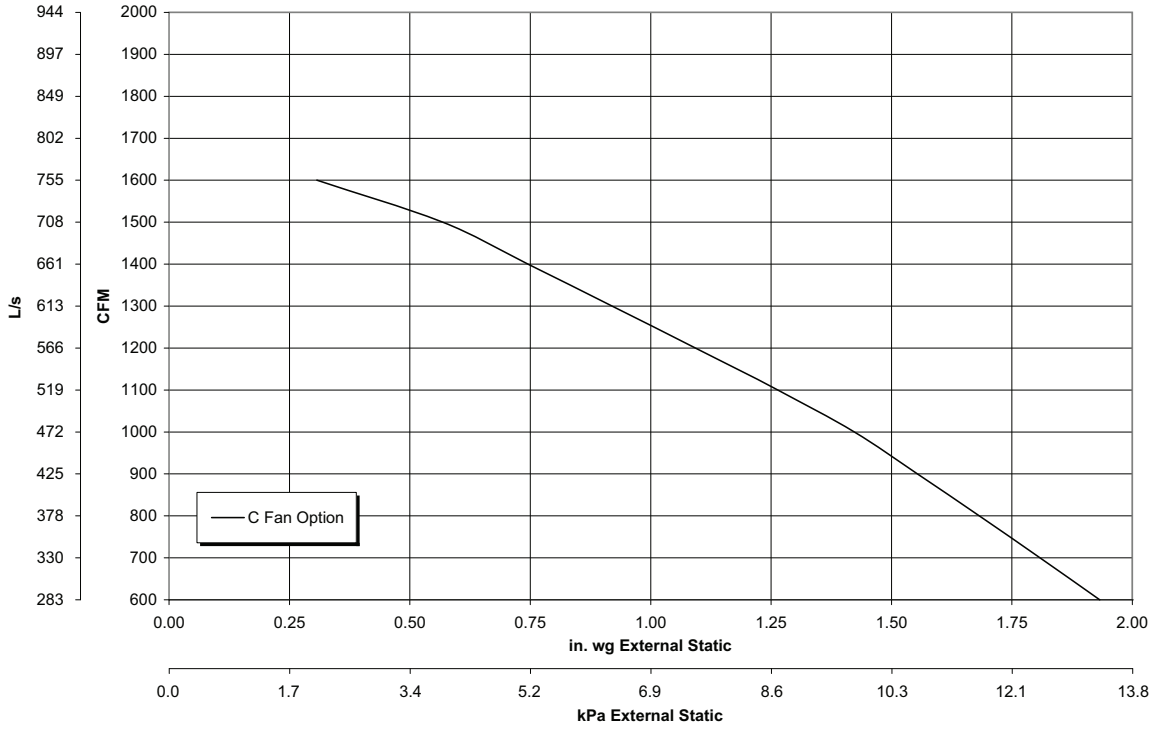


62ECS, 62E2S

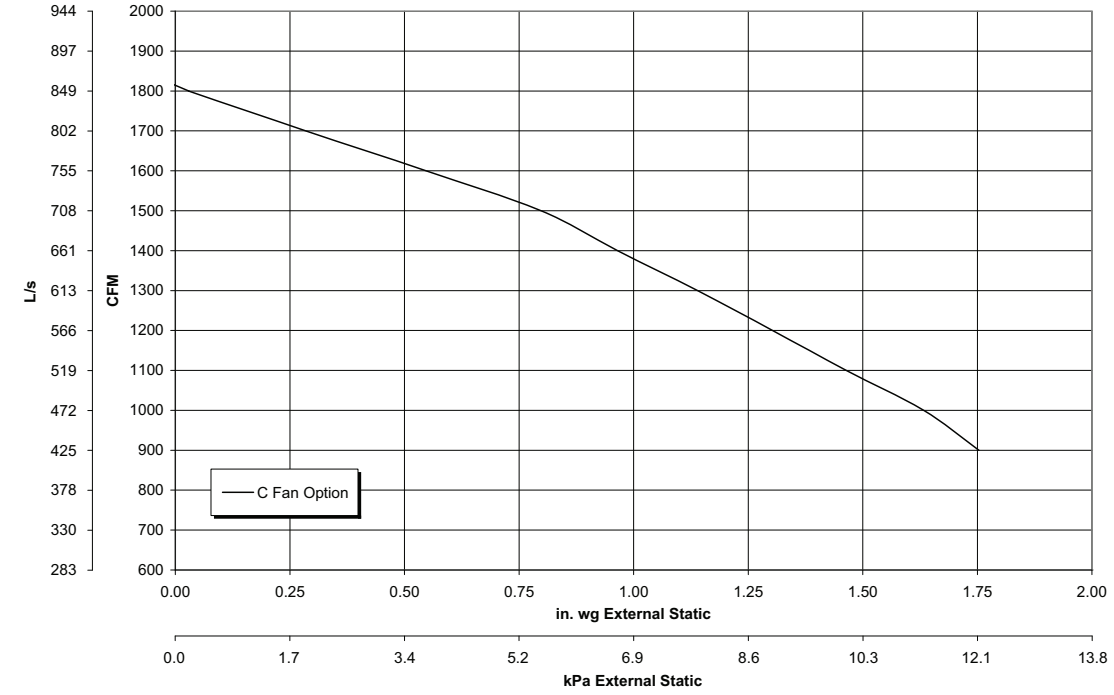


FAN PERFORMANCE CURVES (cont)

62EDD, 62E3D



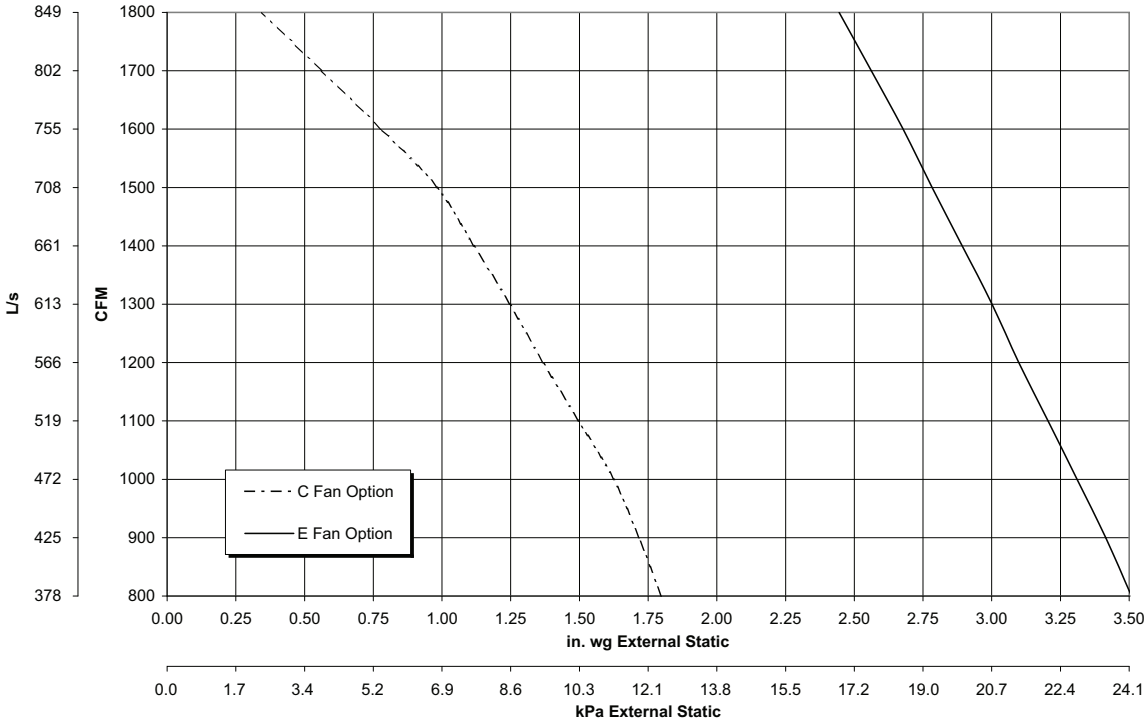
62EDG, 62E3G



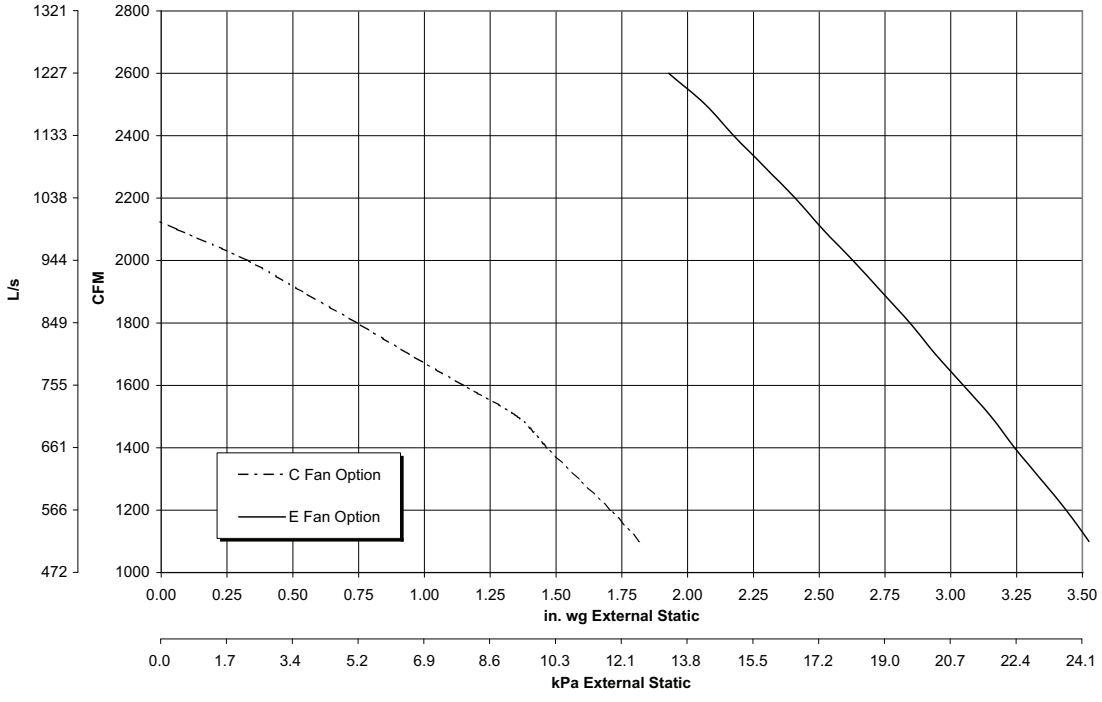
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62EEB, 62E4B

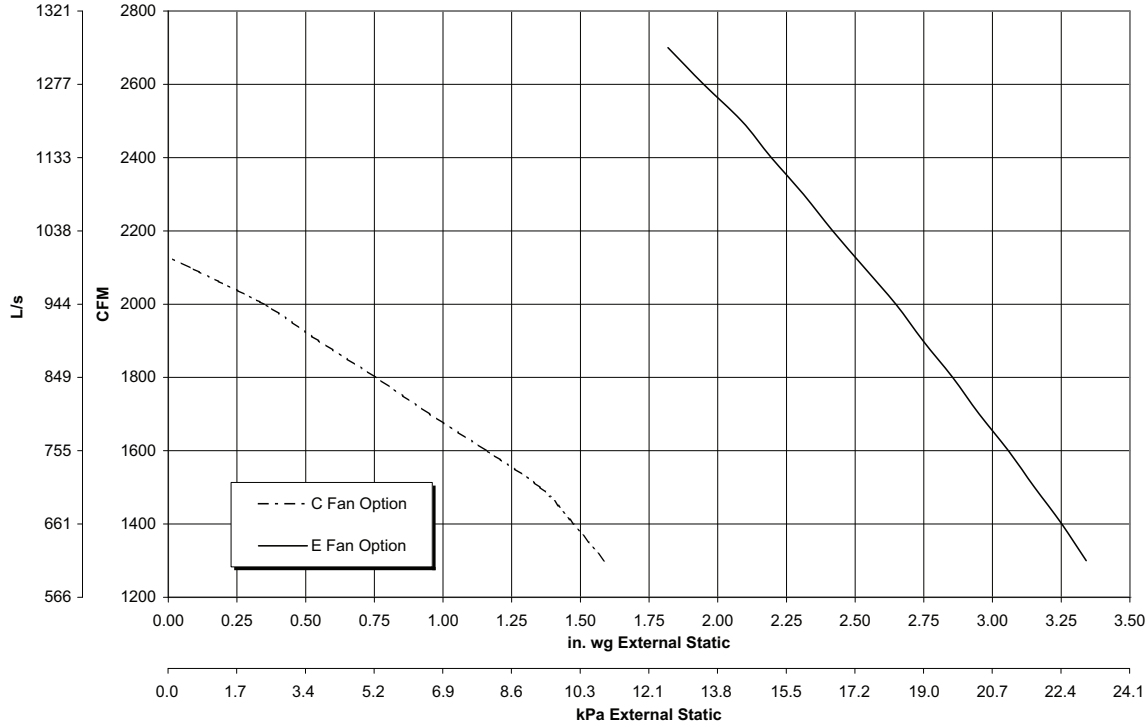


62EED, 62E4D

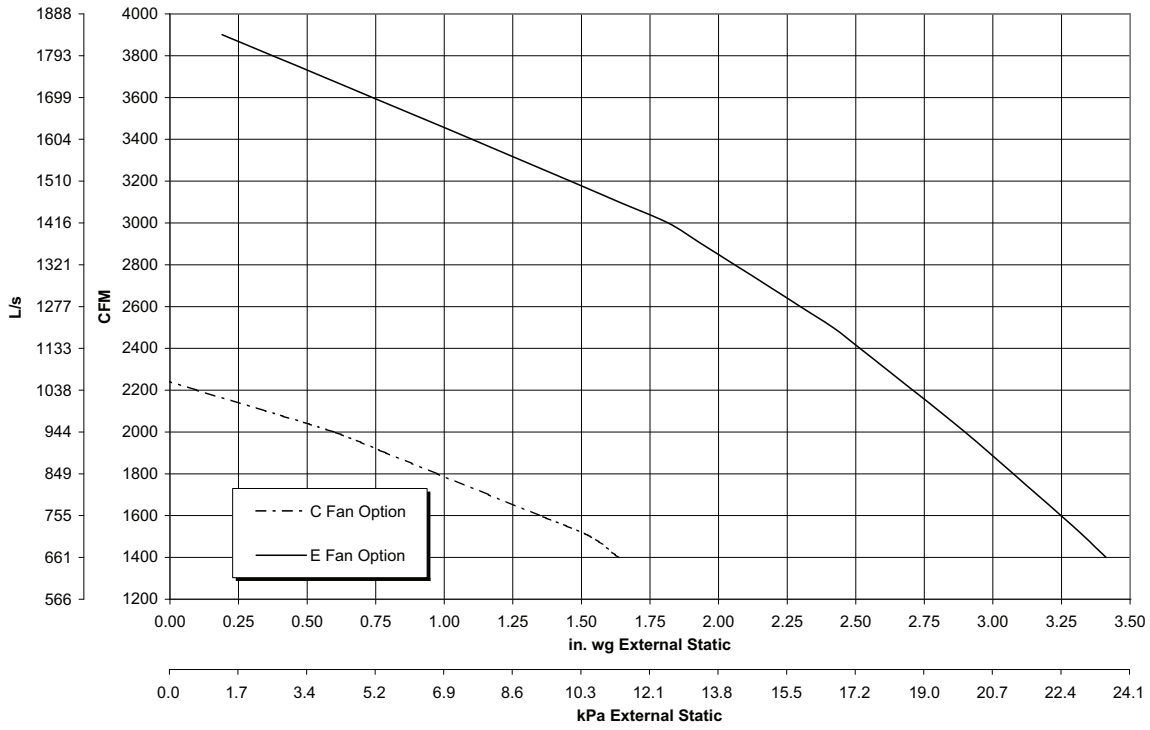


FAN PERFORMANCE CURVES (cont)

62EEF, 62E4F



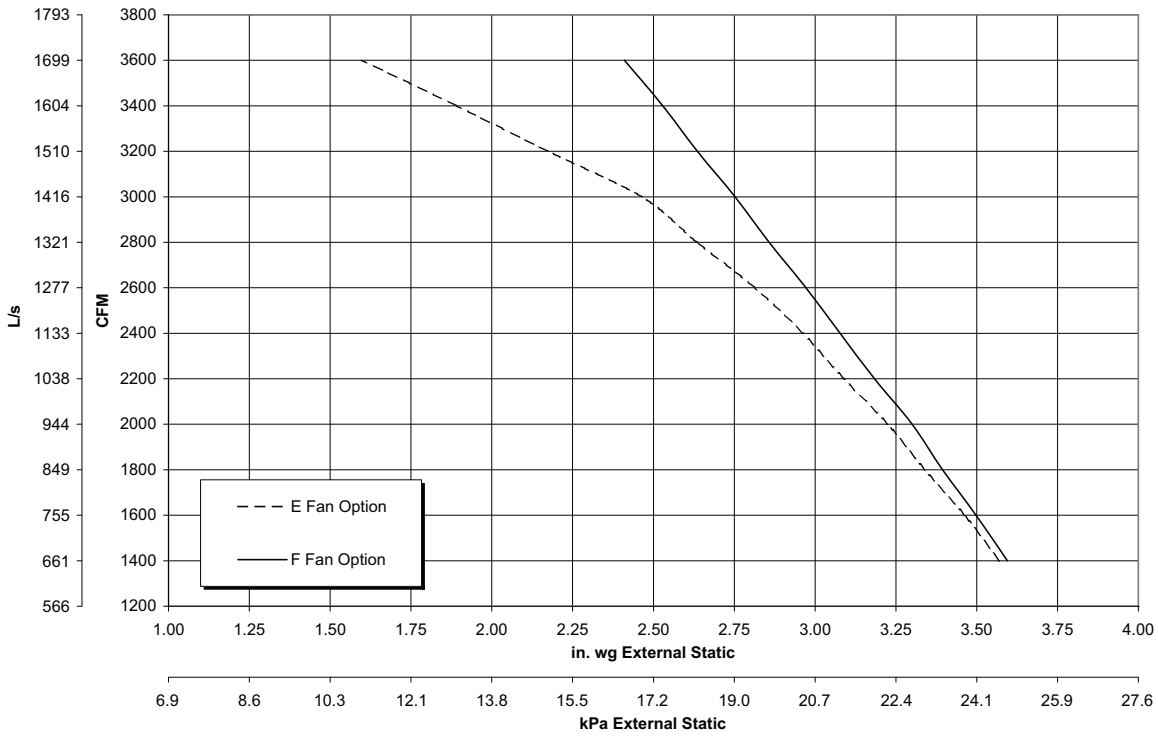
62EEG, 62E4G



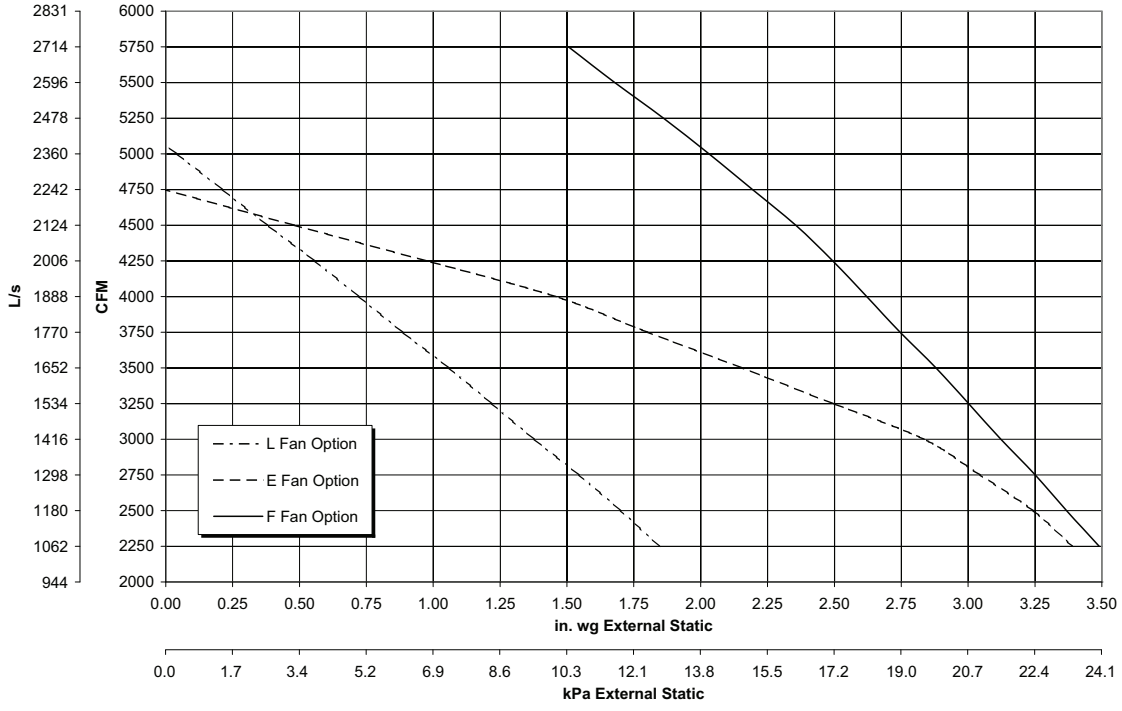
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62EHB, 62E5B

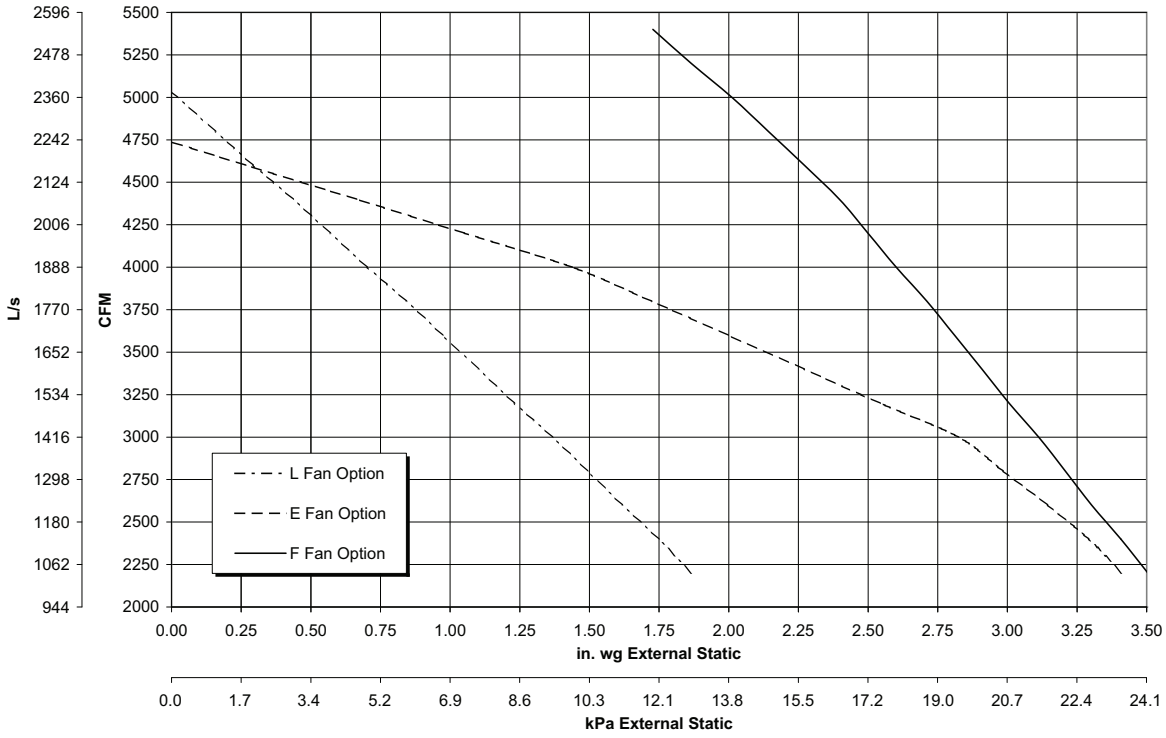


62EHD, 62E5D

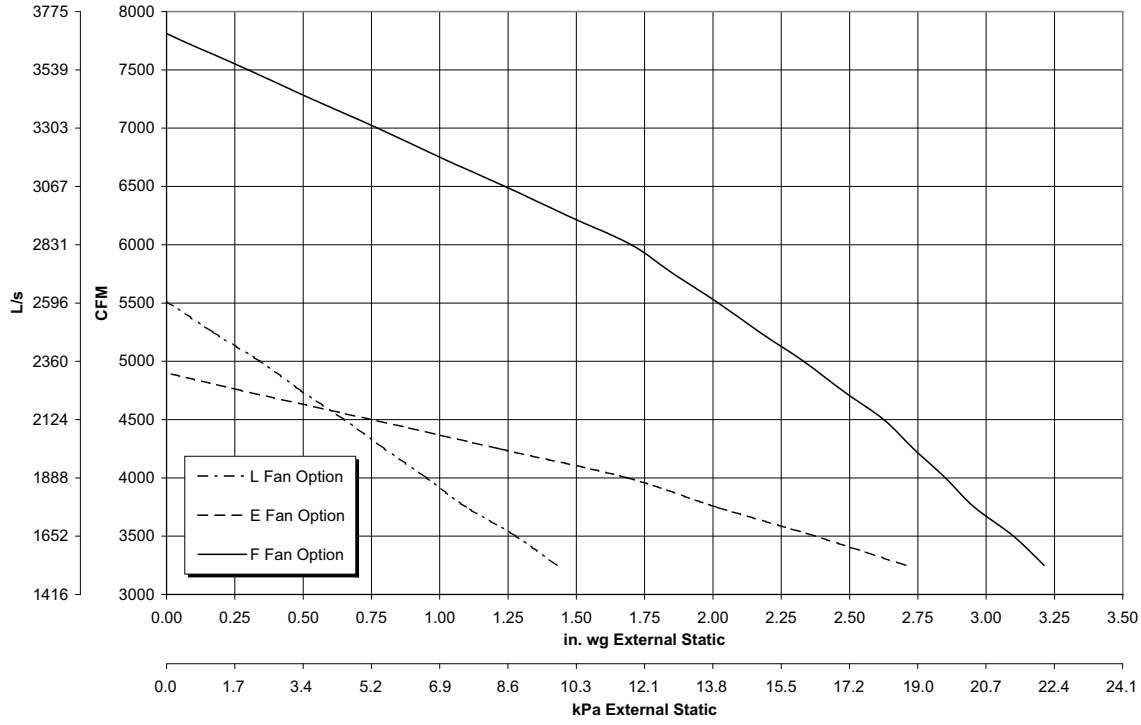


FAN PERFORMANCE CURVES (cont)

62EHF, 62E5F



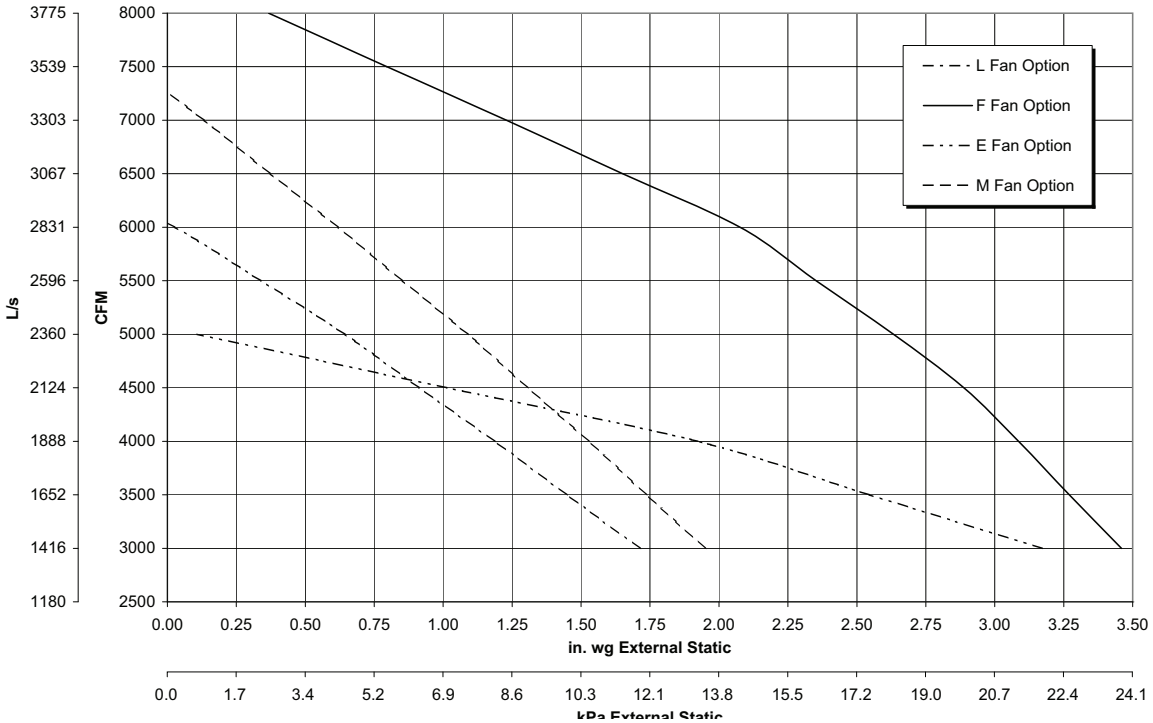
62EHG, 62E5G



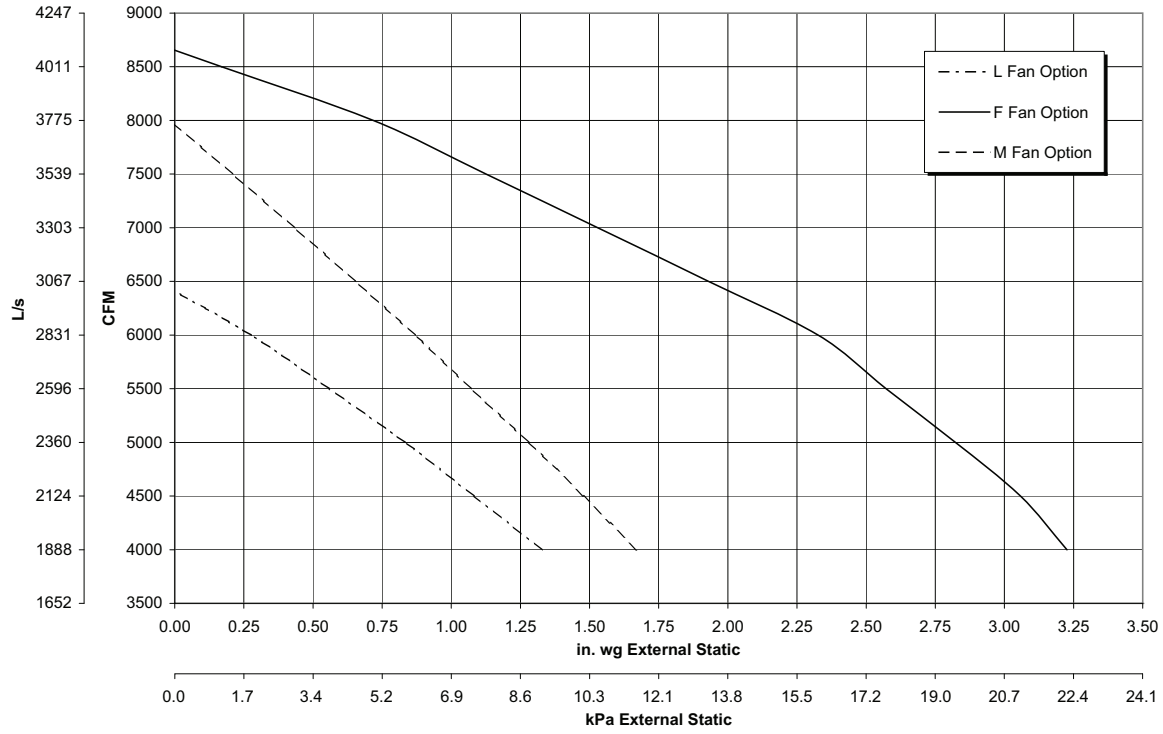
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62EKD, 62E6D

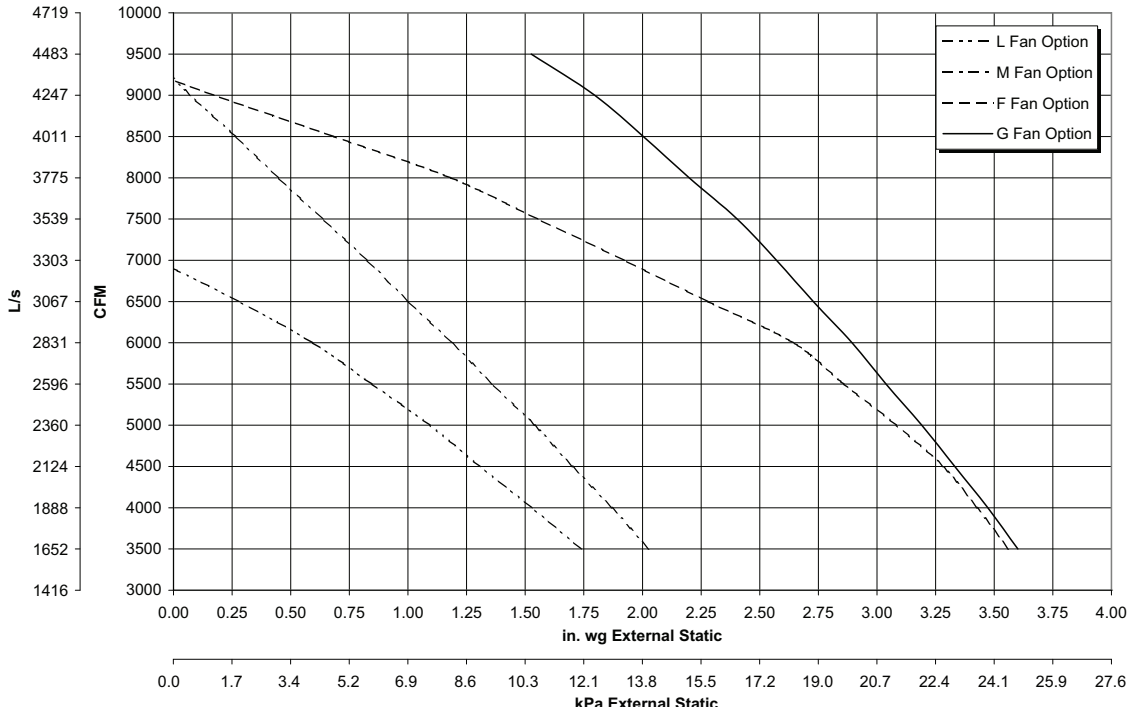


62EKG, 62E6G

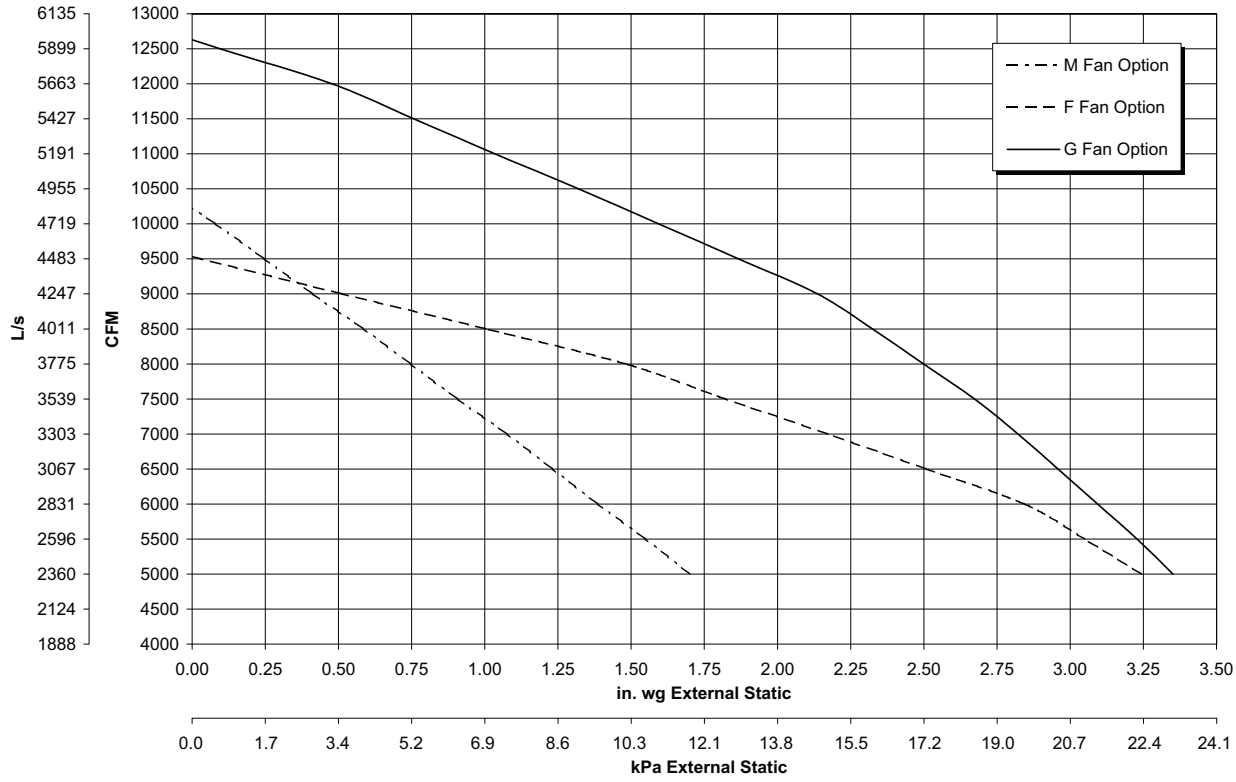


FAN PERFORMANCE CURVES (cont)

62ELD



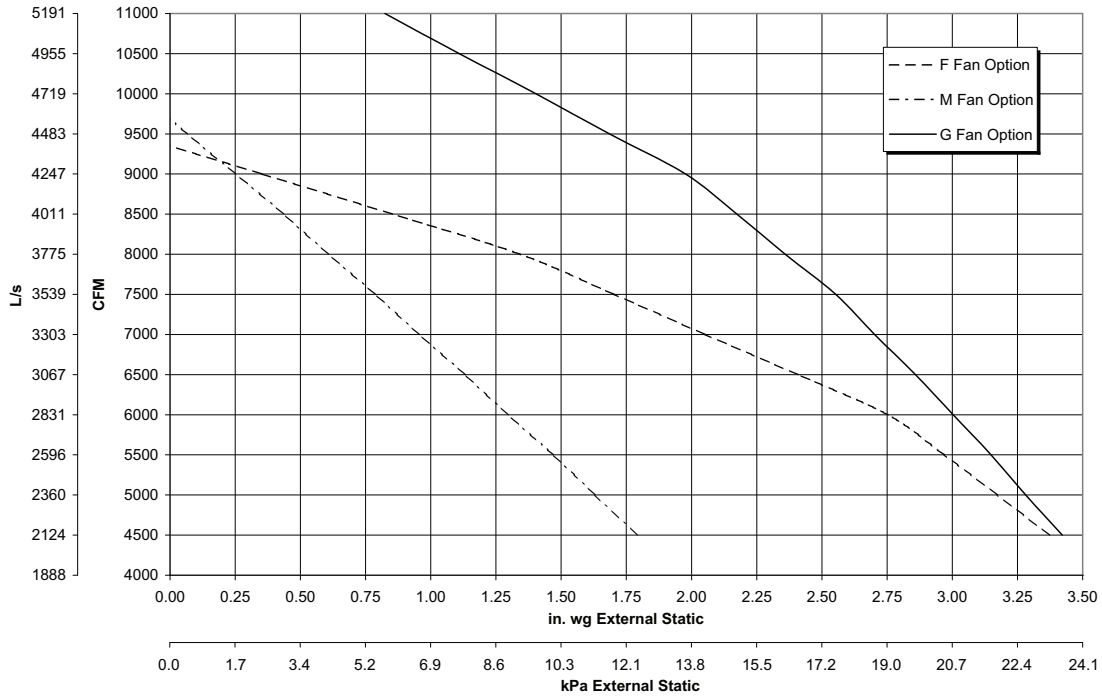
62ELG



Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62EMD



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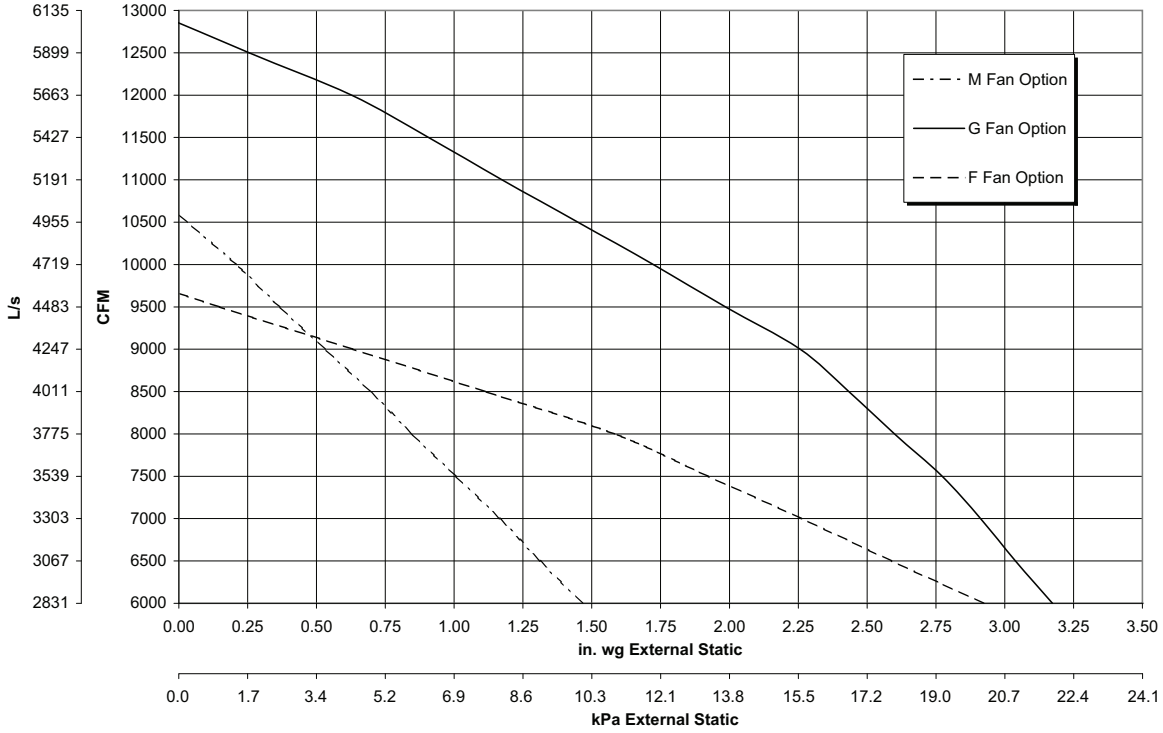
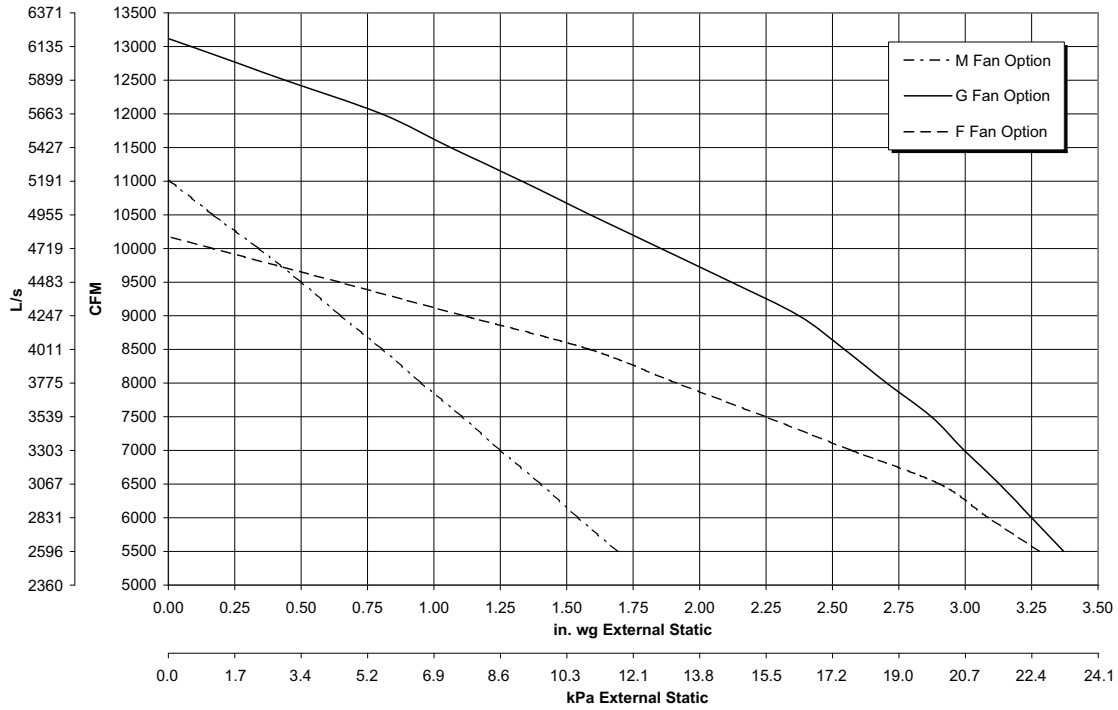


FAN PERFORMANCE CURVES (cont)

62END



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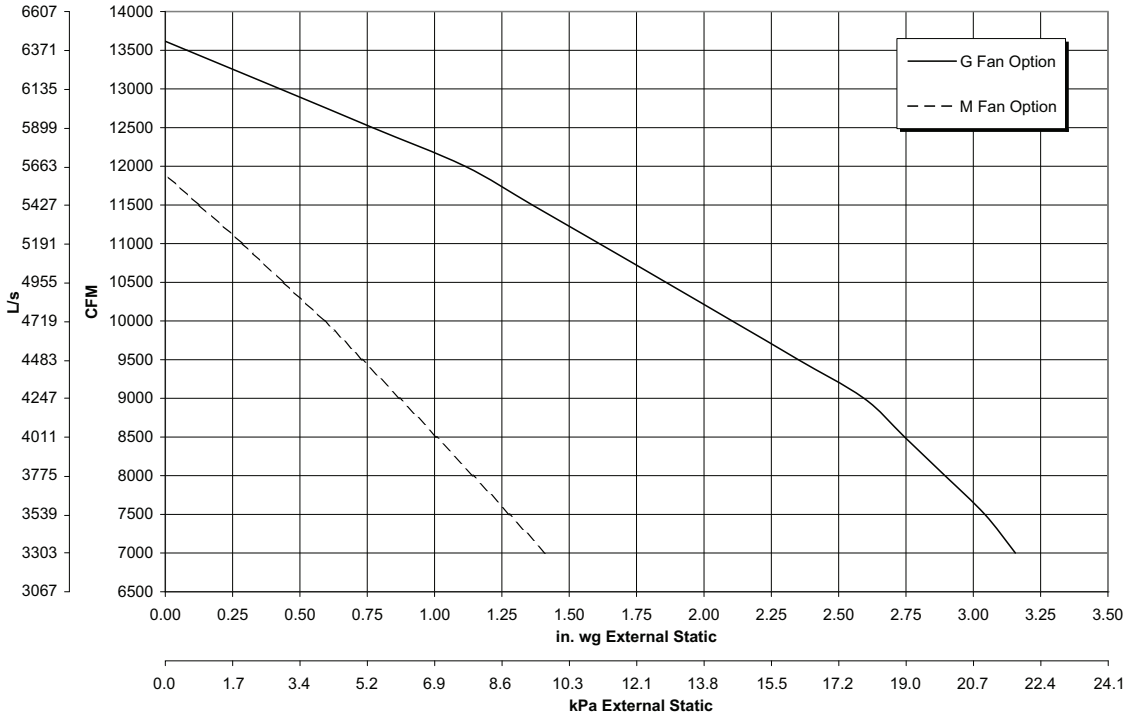
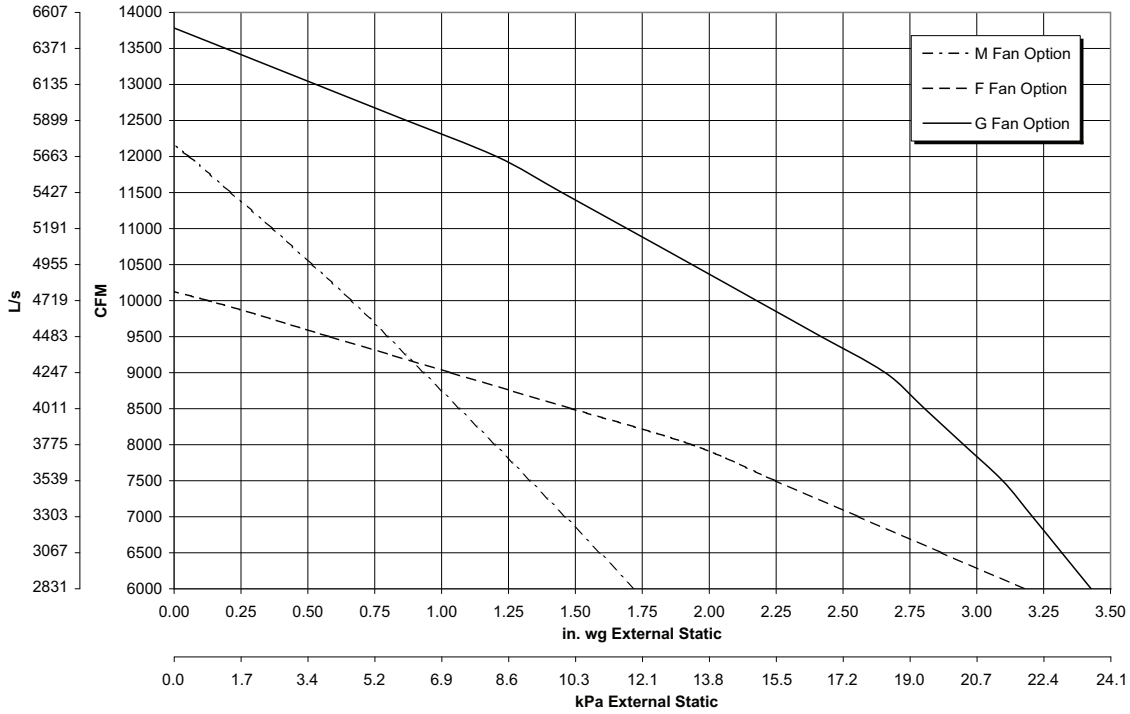


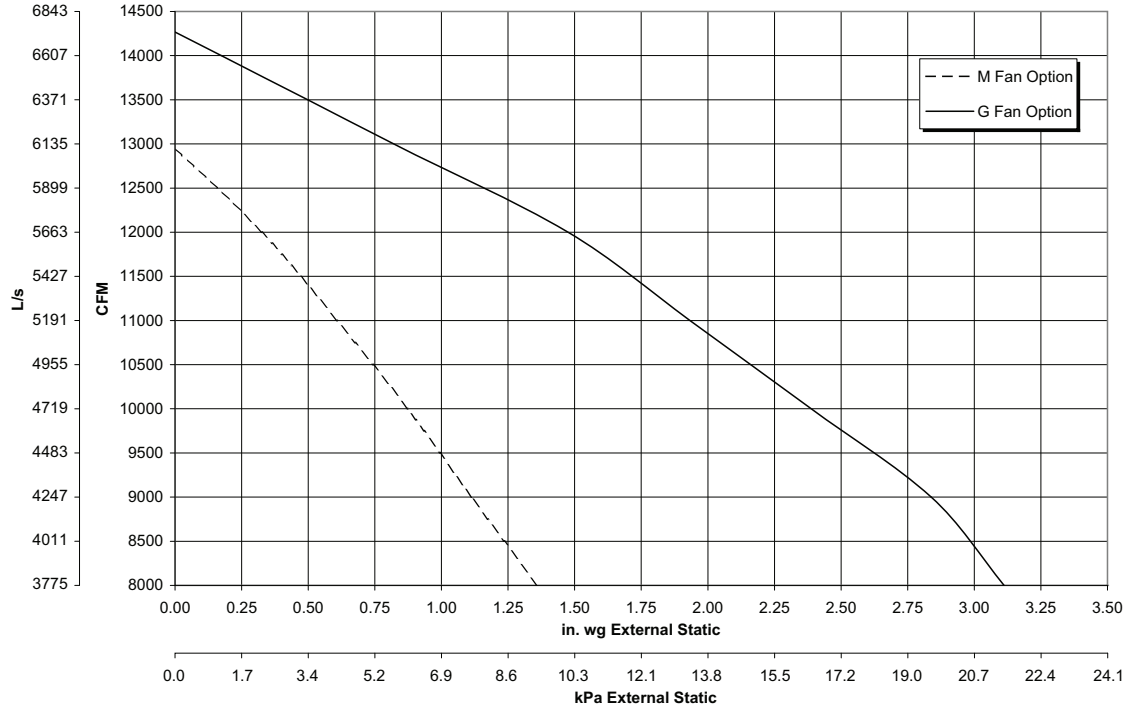
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62EPD

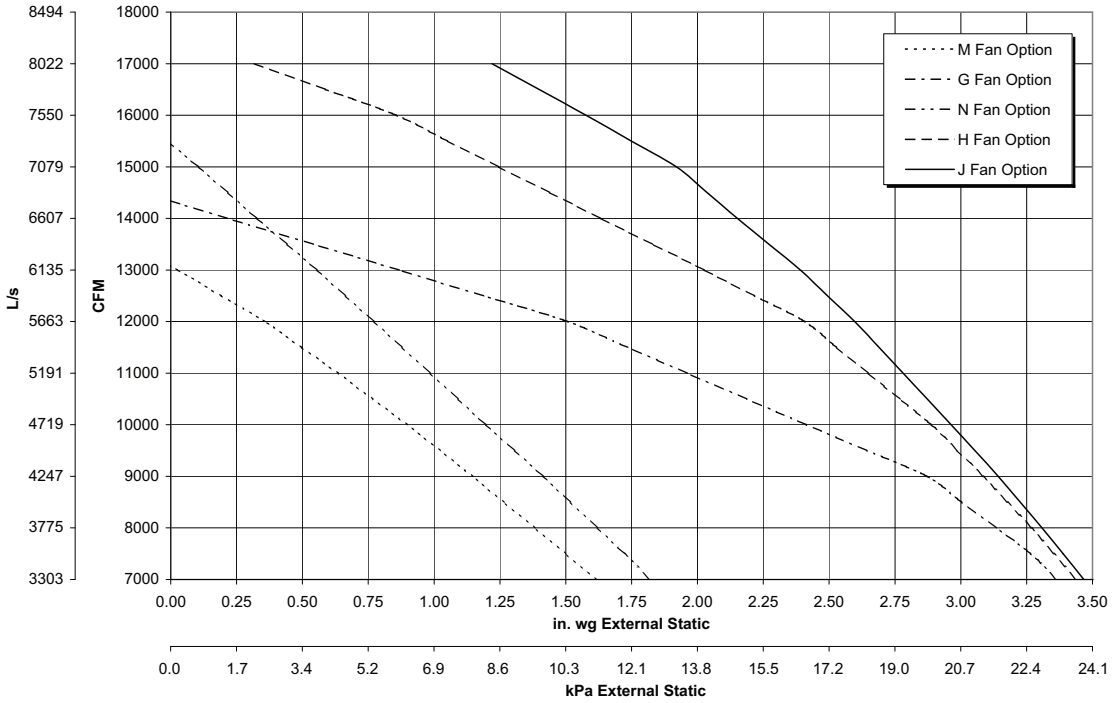


62EPG



FAN PERFORMANCE CURVES (cont)

62ERD



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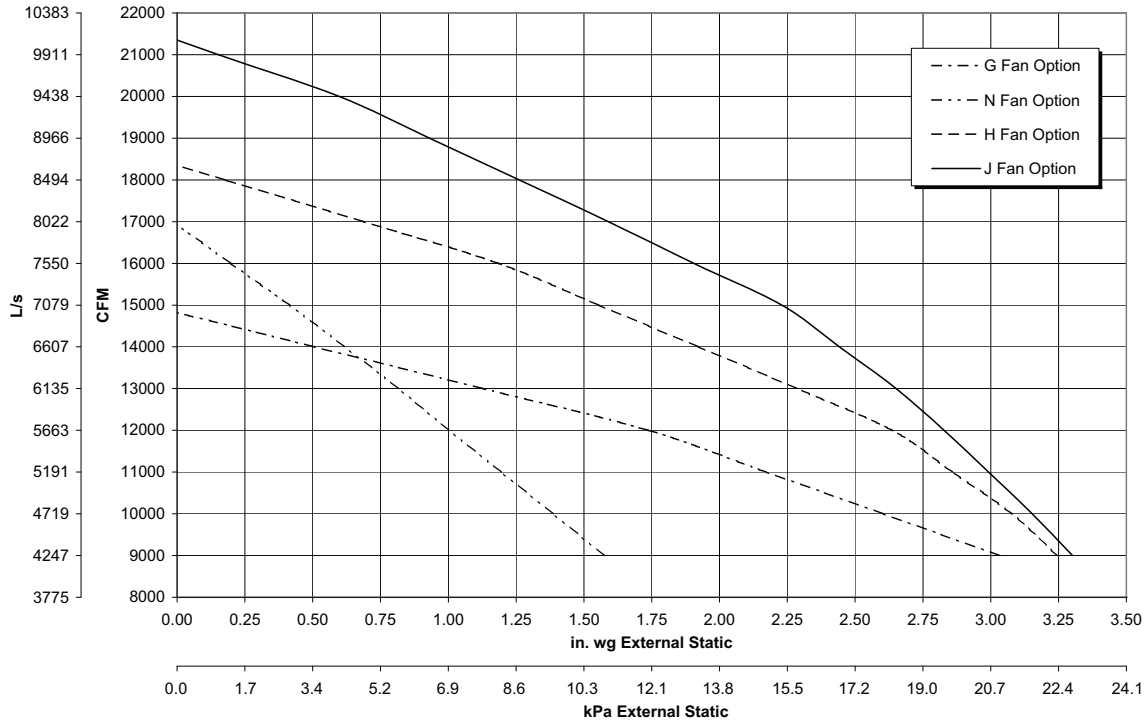
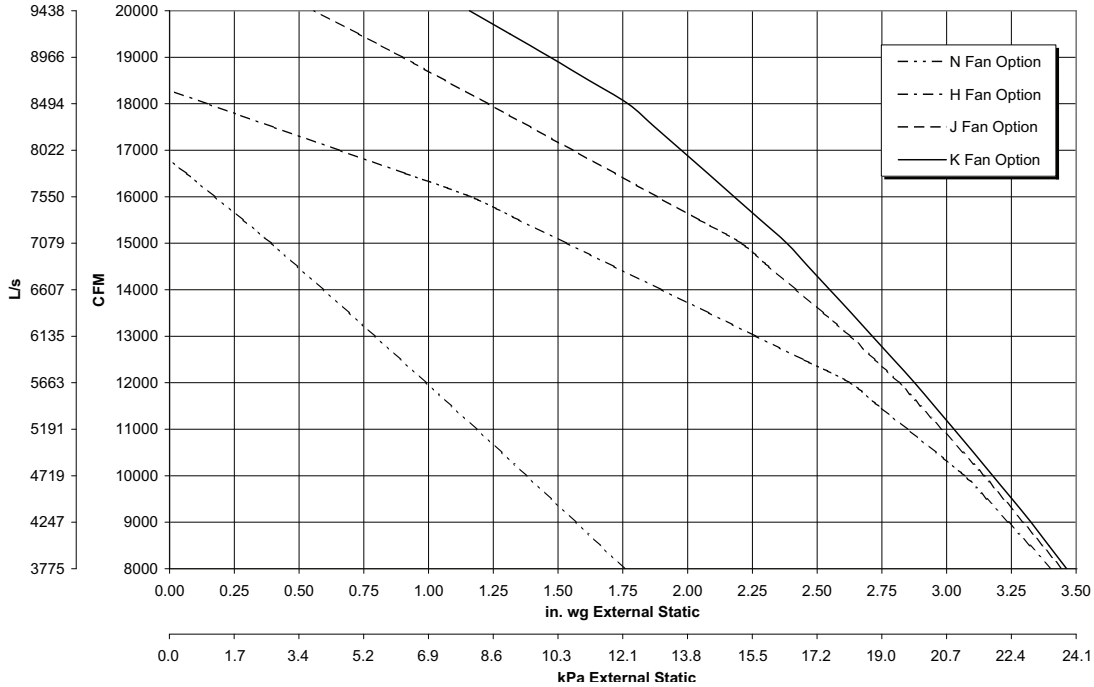


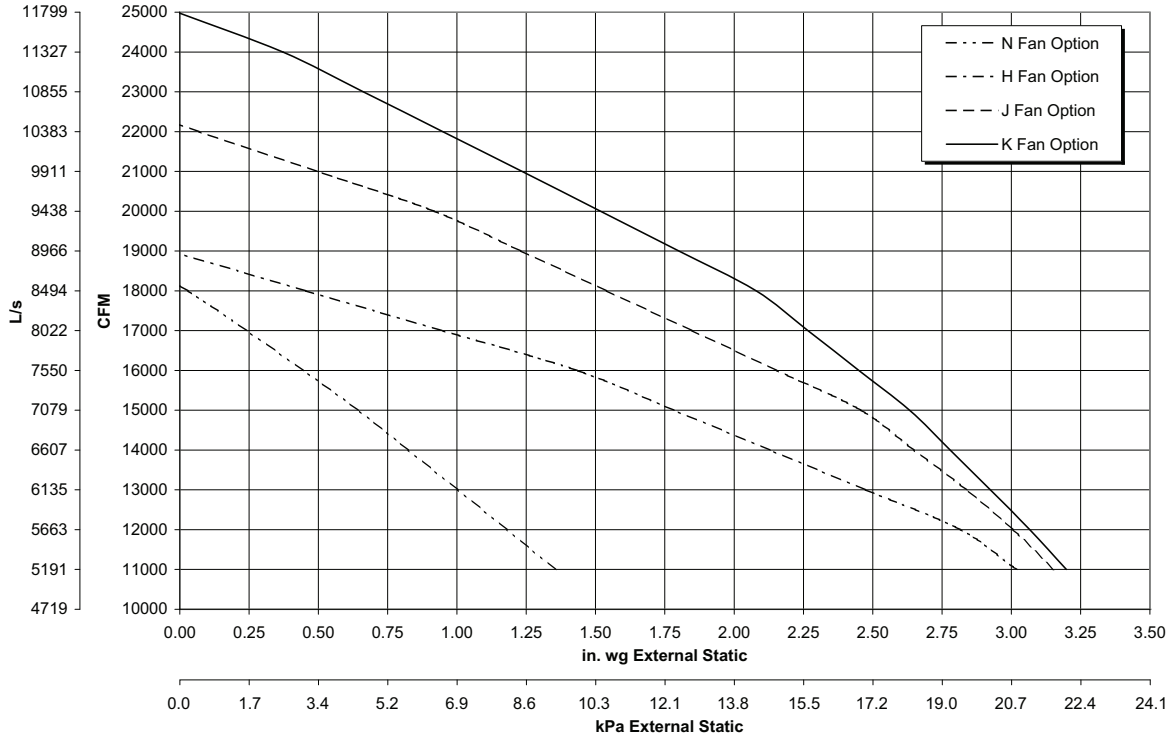
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

62ESD

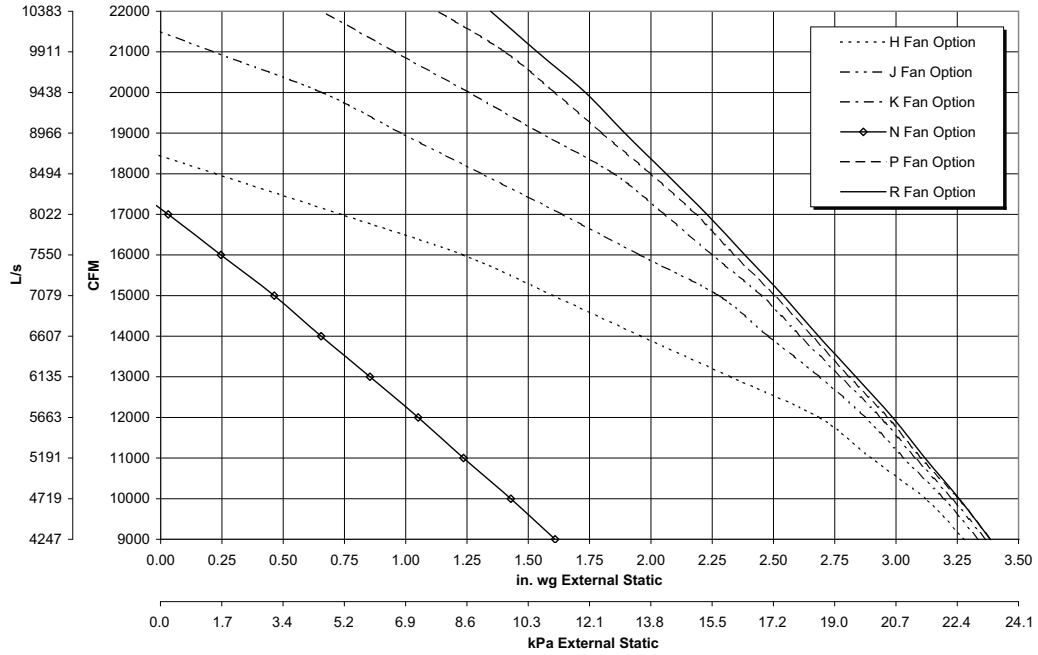


62ESG



FAN PERFORMANCE CURVES (cont)

62ETD



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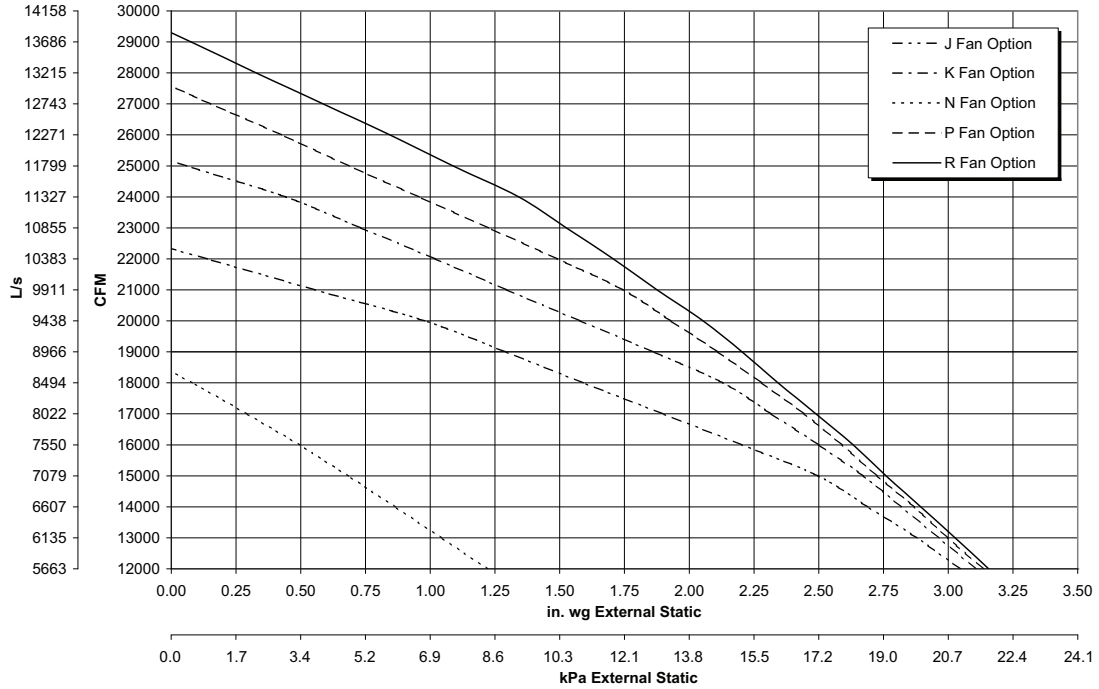
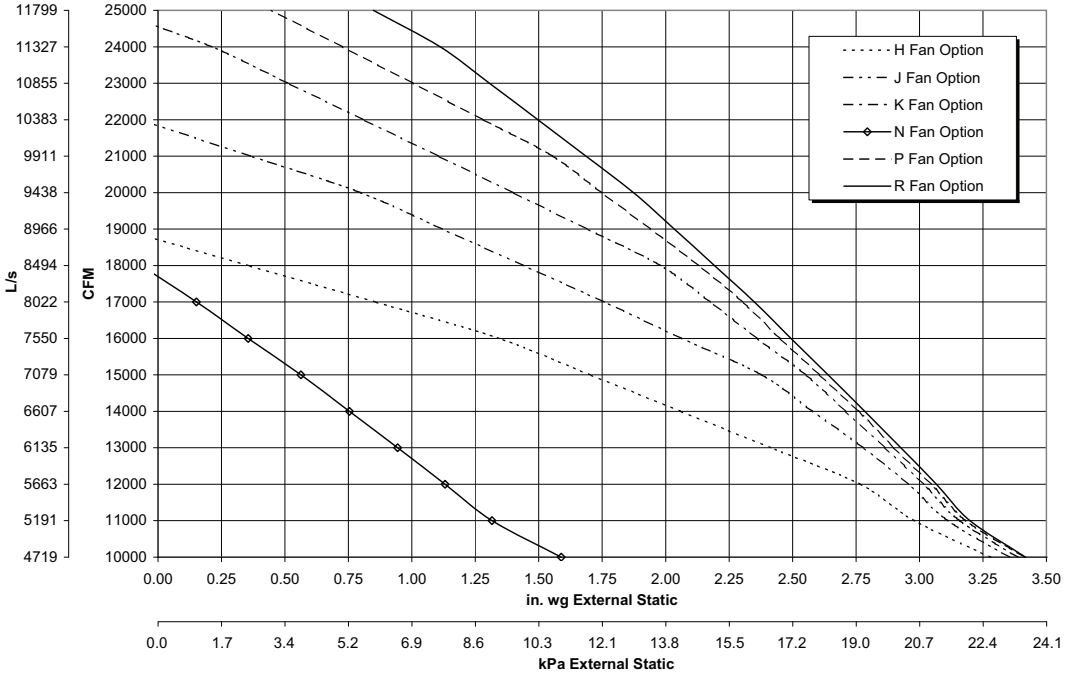


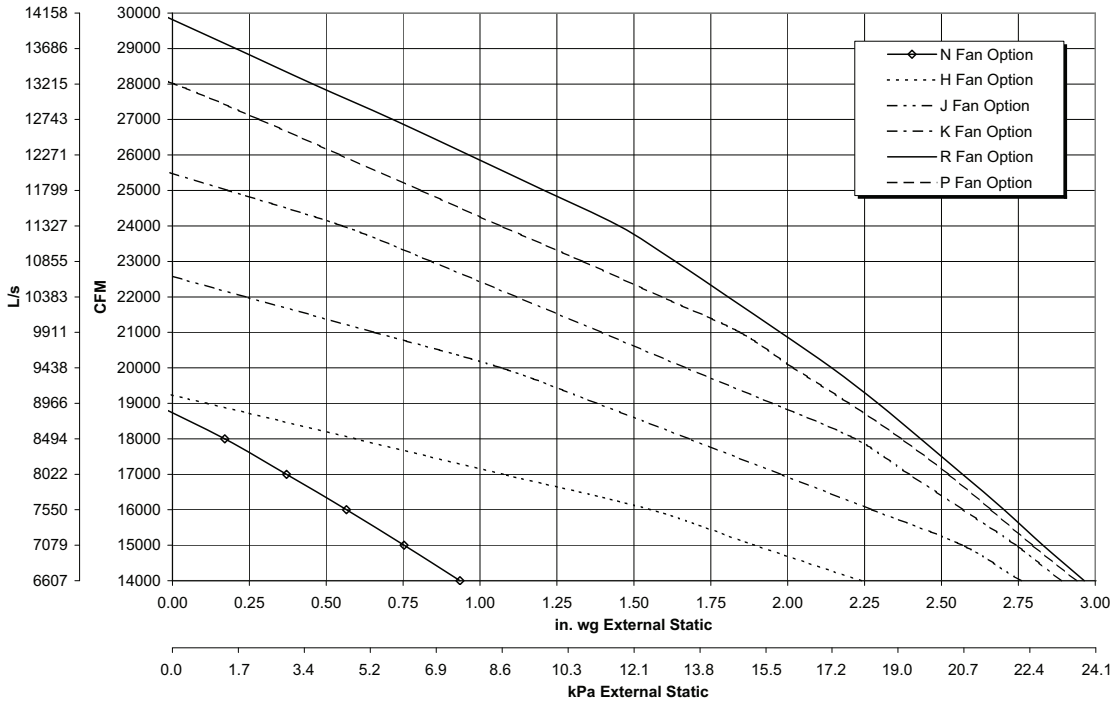
Performance data (cont)

FAN PERFORMANCE CURVES (cont)

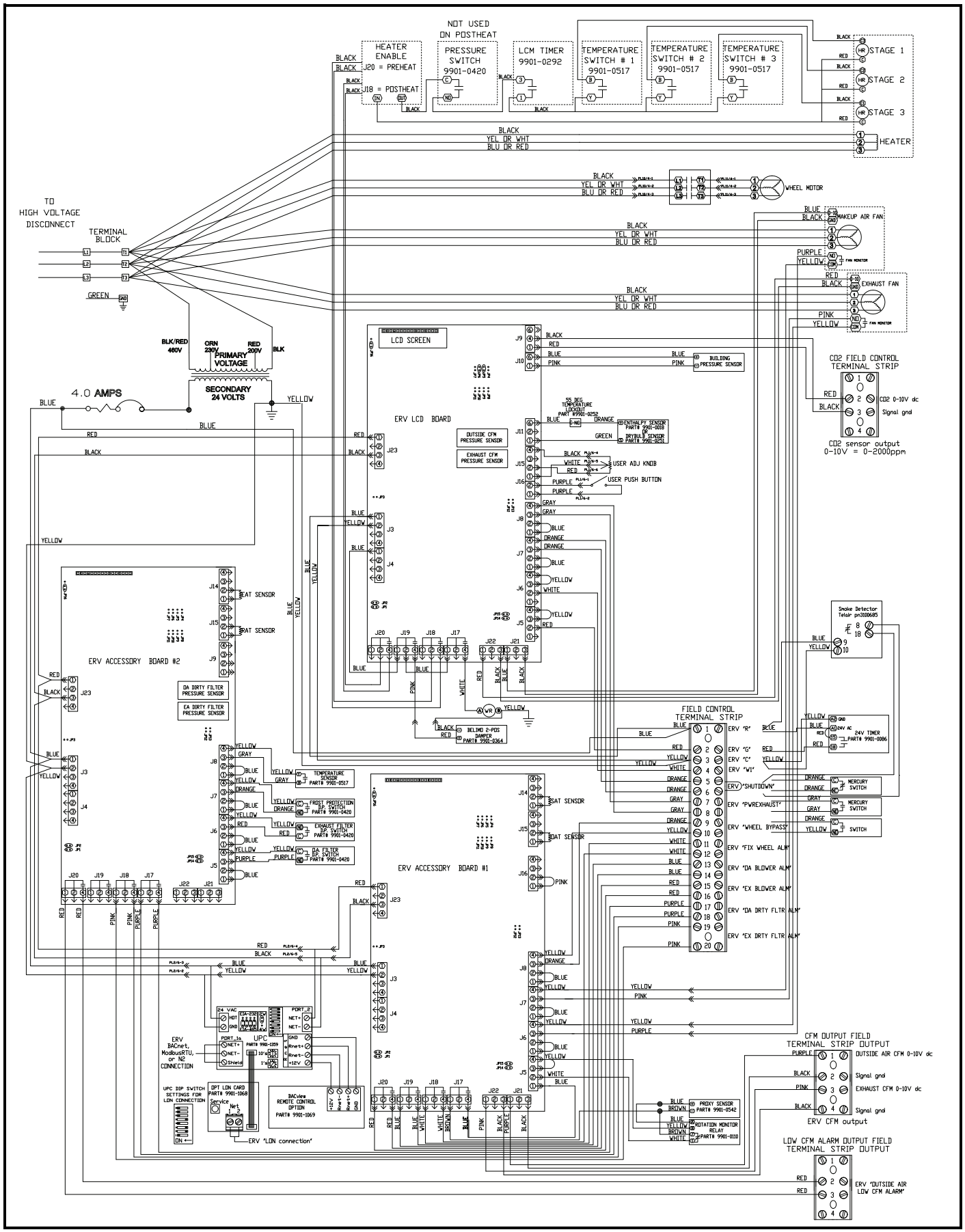
62EVD



62EVG



Typical wiring schematics

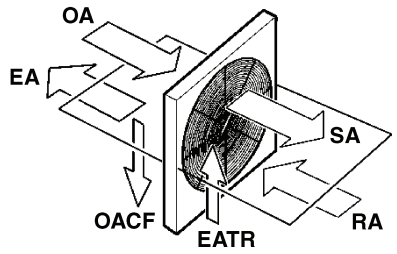


Application data

All ventilated spaces are good candidates for energy recovery systems. The applications that benefit most are those that require a large amount of outside air for a space that has a low internal load. This is true because most outside air loads are latent which requires a larger rooftop unit to accommodate both internal and ventilation loads. Advantages of the ERV unit include the ability to reduce the size of the rooftop unit, provide better humidity levels and provide a stable, tempered space.

Examples of ERV applications are classrooms, churches, conference rooms, game rooms, auditoriums, movie theaters, day care centers, nursing homes, funeral homes, dormitories, and clinics. Retrofits of existing systems to handle outside air without modifying the rooftop unit are excellent applications. Other examples are bars, restaurants, casino/game rooms, barber/beauty shops, bingo halls, locker rooms, recreational facilities and health clubs. Animal shelters such as veterinary clinics and kennels have been very successful implementations. Retail spaces and manufacturing facilities are also good applications.

AIR-TO-AIR ENERGY RECOVERY VENTILATION — AIRFLOW CONVENTION



LEGEND

EA	—	Exhaust Air	**OACF**	—	Outdoor Air Correction Factor
EATR	—	Exhaust Air Transfer Ratio	**RA**	—	Return Air
OA	—	Outdoor Air	**SA**	—	Supply Air

If the outside air requirement is greater than 10% of a rooftop unit's supply air rating an ERV unit should be considered to enhance the comfort of the occupants and reduce the tonnage of the rooftop unit. Carrier's 62E selection program offers a quick, simple look at the advantages and payback of an ERV system.

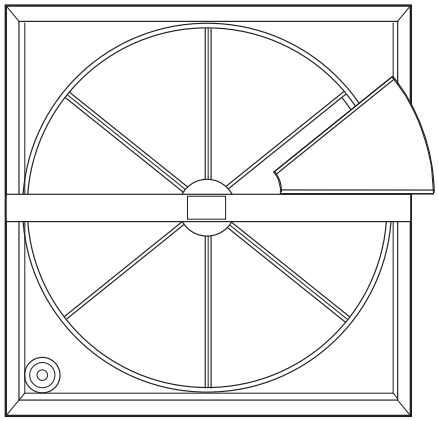
Choosing the proper airflow is essential. Carrier offers fourteen unit sizes from 165 to 11,800 L/s (350 to 25,000 cfm) to allow the designer to optimize the selection based on the application.

Note that all units can be used in applications that require less airflow than the published airflow operating range. This option can be used for high-static applications. Although performance is optimized at equal exhaust and supply airflow rates, the selection program and the 62E unit can be used with unequal airflow amounts. The unit must be sized for the largest airflow amount. The smaller airflow used cannot be less than 50% of the larger airflow in the published range.

Carrier total energy recovery

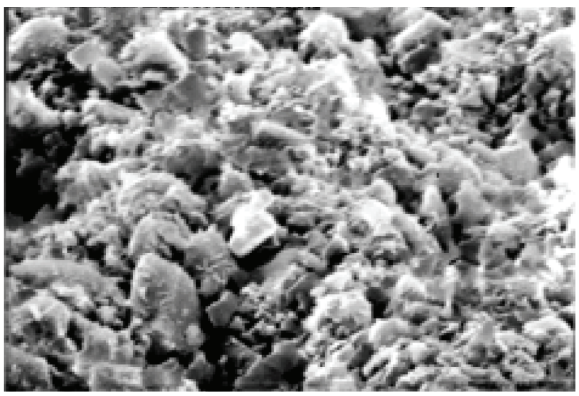
Carrier 62E energy recovery wheels consist of a welded stainless steel hub, spoke and rim assembly, which is independent of the heat transfer matrix. The heat transfer matrix is contained in patented energy transfer segments, removable from the wheel without requiring tools. The energy wheel uses a unique parallel plate geometry and polymer film substrate to provide an optimized heat exchanger design. The polymer film construction is not subject to corrosion in coastal locations or swimming pool areas.

TOTAL ENERGY RECOVERY WHEEL



Silica gel technology — The 62E energy recovery wheels use the desiccant material known as silica gel, which is a highly porous solid adsorbent material that structurally resembles a rigid sponge. It has a very large internal surface composed of myriad microscopic cavities and a vast system of capillary channels that provide pathways connecting the internal microscopic cavities to the outside surface of the sponge. Silica gel enthalpy wheels transfer water by rotating between two airstreams of different vapor pressures. The vapor pressure differential drives molecules into/from these cavities to transfer moisture from the more humid airstream to the drier airstream.

MICROSCOPIC IMAGE OF SILICA GEL



Adsorption: silica gel vs. molecular sieve — The Effect of Relative Humidity on Desiccant Capacity graph shows the characteristic curve for adsorption of water on silica gel. It shows the percent weight adsorbed versus relative humidity of the airstream in contact with the silica gel. The amount of water adsorbed rises linearly with increasing relative humidity (rh) until rh reaches near 60%. It then plateaus at above 40% adsorbed as relative humidity approaches 100%. For contrast, the curve for molecular sieves rises rapidly to plateau at about 20% adsorbed at 20% rh.

The Effect of Relative Humidity on Dessicant Capacity graph explains the following application considerations:

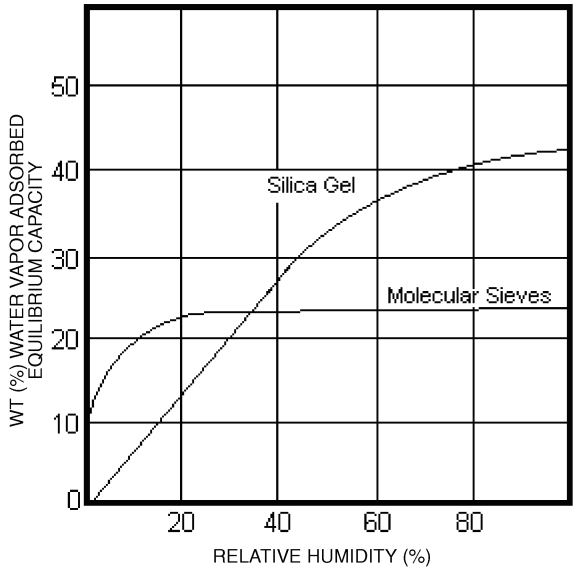
- Molecular sieves are preferred for regenerated applications such as desiccant cooling and dehumidification systems that must reduce the processed airstreams to very low relative humidities.
- Silica gel has superior characteristics for recovering space conditioning energy from exhaust air and handling high relative humidity outside conditions.

The transfer of water by adsorption/desorption is not dependent on temperature. Therefore, the silica gel enthalpy wheel works to reduce latent load at difficult part-load conditions.

Fungal growth and moisture transfer

Water transfer — Carrier 62E units have silica gel-based desiccant wheels. The water molecules are individually transferred by desorption/adsorption to and from the silica gel surfaces. Water is present on the wheel in a molecular layer only, and condensation does not occur. Therefore, Carrier's energy recovery wheels experience dry moisture transfer; there is no bulk liquid water present that could support fungal growth. Water transfer to and from the wheel's desiccant surfaces occurs in the vapor phase; there are no wet surfaces and liquid water does not enter the airstream. Silica gel is also highly selective for water, based on the strong preference of the gel surface for the dipolar water molecule over other compounds.

EFFECT OF RELATIVE HUMIDITY ON DESICCANT CAPACITY



Frost control requirements

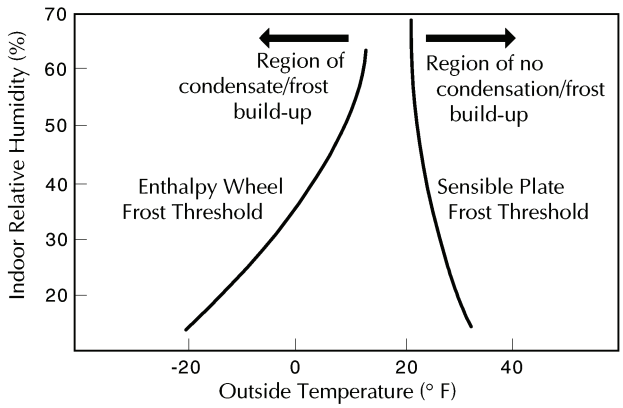
Energy recovery systems require frost protection or a means of defrosting in climates that experience severe winter conditions. Frost formation results in a reduction and eventual blockage of airflow through the energy wheel.

Frost formation causes reduced airflow through the heat exchanger. Without frost control, energy recovery and airflow may be significantly reduced. The frost threshold temperature is the point at which frost begins to accumulate on heat exchanger surfaces. It is a function of both outside temperature and indoor relative humidity. The Frost Threshold Comparison figure compares the frost threshold of a plate-type sensible heat exchanger with that of an enthalpy wheel.

Note that frost forms at temperatures between – 1.1 and – 5.6 C (22 and 30 F) in a plate-type heat exchanger, frost threshold temperatures for enthalpy wheels are generally 10 to 20 degrees lower, approximately –17.8 to –6.7 C (0° F to 20 F). This is because the enthalpy wheel removes water from the exhaust airstream, effectively lowering the exhaust's dew point. The water removed is subsequently picked up through desorption by the entering outdoor air.

Depending on the indoor relative humidity in areas where winter outside temperatures are between –20.6 and –1.1 (–5 F and 22 F), enthalpy wheel based recovery systems have a significant advantage over sensible plate type units because there is no additional cost for frost control. Even in cold areas, in most cases, enthalpy wheel based systems for schools and office buildings can be designed without frost control because most of the frosting hours are at night when the building is unoccupied. Consult bin data, such as that provided by ASHRAE, to qualify daytime applications in cold climates for frost-free operation.

FROST THRESHOLD COMPARISON



Frost Thresholds:
Enthalpy Wheels vs. Plate-type Heat Exchangers

Application data (cont)

The Frost Thresholds Temperatures table lists typical frost threshold temperatures for Carrier's total energy recovery wheels over a wide range of indoor-air temperatures and relative humidities. Frost control is not required until outdoor-air temperatures are below the threshold.

FROST THRESHOLDS TEMPERATURES (C)

INDOOR AIR RH (%)	INDOOR AIR DRY BULB TEMPERATURE			
	21.1 C	22.2 C	23.9 C	26.7 C
20	–25.6	–25.0	–23.9	–22.2
30	–19.4	–18.9	–18.3	–16.1
40	–15.0	–13.9	–12.8	–11.7
50	–11.1	–10.6	–9.4	–7.8
60	–7.8	–7.2	–6.1	–3.3

FROST THRESHOLDS TEMPERATURES (F)

INDOOR AIR RH (%)	INDOOR AIR DRY BULB TEMPERATURE			
	70 F	72 F	75 F	80 F
20	–14	–13	–11	–8
30	–3	–2	–1	3
40	5	7	9	11
50	12	13	15	18
60	18	19	21	26

In regions where winter temperatures are extreme, Carrier's total energy recovery wheels can be used effectively with specific frost control strategies, such as:

- Preheat frost control, a universally applicable strategy which meets all design requirements.
- On/Off control.
- Exhaust only using the exhaust air defrost control.

NOTE: Refer to ASHRAE for bin data in cold climates where the threat of wheel frosting is frequent. Consult this information to ensure appropriate preheat techniques are used during occupied times.

Frost prevention methods — Frost control is required in extremely cold climates to preserve performance and assure the continuous supply of outdoor air. Enthalpy wheel frost control strategies take advantage of inherently low frosting thresholds. This results in minimized energy use and maximized design load reductions. In regions that experience extreme winter conditions, the following frost control techniques can be effective when properly controlled:

Preheat frost control — Preheat frost control is one of the many methods of preventing frost formation and ensuring design outdoor air ventilation rates for the most extreme winter applications. For continuous operation below the frost threshold temperature, a preheat coil may be configured into the energy recovery section in the outdoor airstream just before the energy wheel. The frost control heating coil should be controlled to maintain a supply-air temperature approximately 2.8° C (5° F) above the frost threshold for a given condition.

Refer to the Preheat Frost Control Temperatures and Capacity table for the required capacity that is required to ensure that the preheat temperature is where it should be to prevent frost formation.

Note that the required preheat temperature at design is always below the frosting threshold for a given condition. This is due to the fact that preheating lowers the relative humidity of the outside air entering the wheel, effectively lowering the frost threshold for any given set of indoor air conditions. This reduces the preheater capacity slightly and minimizes the preheater operating expense at design temperatures.

Preheat coil sizing — The Btu requirement for preheat is a function of the cfm of incoming outdoor air and the temperature difference (ΔT) between the preheat temperature at the lowest anticipated operating temperature. The kW (Btu) requirement will be calculated by the 62E selection software. The sensible heat kW (Btu) requirements may also be calculated with the following formula:

Sensible Heat (W) = 1.207 x L/s x required ΔT (°C)

Sensible Heat (Btuh) = 1.08 x cfm x required ΔT (°F)

OR

kW = Btuh/3414

For example:

System outdoor air required: 1510 L/s (3200 cfm)
Return air temperature: 21.1 C (70 F)
Return air relative humidity: 30%
Outdoor winter design temperature: –20.6 C (–5 F)
From the Preheat Frost Control Temperatures and Capacity Requirements at Selected Indoor and Outdoor Conditions table, temperature ΔT = 3.3 C (6 F)

W = 1.207 x L/s x ΔT (°C)
W = 1.207 x 1510 x 3.3
W = 6014
Required kW = 6.0

Btuh = 1.08 x cfm x ΔT (°F)
Btuh = 1.08 x 3200 x 6
Btuh = 20,736
Required kW = Btuh/3414
Required kW = 20,736/3414 = 6.0 kW

The preheat set point should correspond to the frost thresholds listed in the Frost Thresholds Temperature table on this page.

On/off control — Use ON/OFF control for intermittent ventilation below the frost threshold temperature. A control scheme would disable the energy wheel system when the outdoor-air temperature drops down to the frost threshold temperature. The system would be controlled on when the outside air conditions permit. On/off control should only be used if the following considerations make intermittent ventilation acceptable:

- Temperatures below the frost threshold (temperature when the natural ventilation rate is highest because of maximum indoor/outdoor temperature differential) occur for a limited amount of time.
- Temperatures below the winter design temperature usually occur during early morning hours. Depending on the application, these low temperatures may only occur

during unoccupied periods when ventilation is not required.

Frost protection option — This method allows the exhaust fan to operate below the frost threshold temperature; however, a temperature sensor would disable the supply fan when the outdoor-air temperatures reach the frost control set point. The outdoor-air temperature sensor is located in the outdoor air intake of the ERV section. To avoid depressurization of the space, fresh air dampers may be required as part of the building's ventilation system.

PREHEAT FROST CONTROL TEMPERATURES AND CAPACITY (ΔT) REQUIREMENTS AT SELECTED INDOOR AND OUTDOOR CONDITIONS (C)

OUTDOOR WINTER DESIGN TEMP (C)	INDOOR AIR (RETURN) CONDITIONS					
	21.1 C and 20% RH		21.1 C and 30% RH		21.1 C and 40% RH	
	Preheat Temperature Design (C)	Required Capacity (°C)	Preheat Temperature Design (C)	Required Capacity (°C)	Preheat Temperature Design (C)	Required Capacity (°C)
–15.0	—	—	—	—	—	—
–17.8	—	—	—	—	–13.3	4.4
–20.6	—	—	–17.2	3.3	–14.4	6.1
–23.3	—	—	–18.3	5.0	–15.6	7.8
–26.1	–22.8	3.3	–19.4	6.6	–16.1	10.0
–28.9	–23.9	5.0	–20.0	8.8	–16.7	12.7
–31.7	–25.0	6.6	–20.6	11.1	–16.7	15.0
–34.4	–25.6	8.8	–21.1	13.3	–17.2	17.2
–37.2	–26.1	11.1	–21.1	15.5	–17.2	20.0
–40.0	–26.7	13.3	–21.7	18.3	–17.2	22.7

LEGEND

RH — Relative Humidity

PREHEAT FROST CONTROL TEMPERATURES AND CAPACITY (ΔT) REQUIREMENTS AT SELECTED INDOOR AND OUTDOOR CONDITIONS (F)

OUTDOOR WINTER DESIGN TEMP (F)	INDOOR AIR (RETURN) CONDITIONS					
	70 F and 20% RH		70 F and 30% RH		70 F and 40% RH	
	Preheat Temperature Design (F)	Required Capacity (F)	Preheat Temperature Design (F)	Required Capacity (F)	Preheat Temperature Design (F)	Required Capacity (F)
5	—	—	—	—	—	—
0	—	—	—	—	8	8
–5	—	—	1	6	6	11
–10	—	—	–1	9	4	14
–15	–9	6	–3	12	3	18
–20	–11	9	–4	16	2	23
–25	–13	12	–5	20	2	27
–30	–14	16	–6	24	1	31
–35	–15	20	–6	28	1	36
–40	–16	24	–7	33	1	41

LEGEND

RH — Relative Humidity

Guide specifications

Packaged Energy Recovery Ventilator

HVAC Guide Specifications

Size Range: **165 L/s to 11,800 L/s (350 cfm to 25,000 cfm), Nominal**

Carrier Model Numbers: **62E**

Part 1 — General

1.01 SYSTEM DESCRIPTION

One-piece energy recovery ventilation (ERV) unit is an electronically controlled ventilation air preconditioner utilizing an AHRI 1060 (U.S.A. Standard) certified energy recovery cassette to reduce the cooling and heating loads placed on the primary HVAC unit by untreated outdoor air. Building exhaust air shall be introduced to the ERV unit through ductwork or by a specially designed transition connected to a Carrier rooftop unit. Unit shall be designed to function as a stand-alone ERV or may be used in conjunction with a packaged HVAC unit.

1.02 QUALITY ASSURANCE

A. Unit shall be designed in accordance with UL Standard 1995 version 3 (U.S.A. Standard).

B. Unit shall be ETL tested and certified (U.S.A. Standard).

C. Roof curb shall be designed to conform to NRCA standards (U.S.A. Standard).

D. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation (U.S.A. Standard).

E. Unit casing shall be capable of withstanding ASTM No. 141 (Method 6061) 500-hour salt spray test (U.S.A. Standard).

F. Unit shall be AHRI 1060 certified (U.S.A. Standard), latest edition.

Part 2 — Products

2.01 EQUIPMENT (Standard)

A. General:

The ERV unit shall be a factory assembled, single-piece unit. Contained within the unit enclosure shall be all factory wiring with a single, pre-determined point of power input and a single point of 24-volt control wiring.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel coated with a pre-painted baked enamel finish.
2. Unit shall have hoods installed over outside air intake and exhaust openings.
3. The cabinet shall be insulated on the tempered side of the ERV with 25 mm (1-in.) insulation in a double-walled compartment.
4. The exhaust airstream shall have a back draft damper to prevent air penetration during off cycles.
5. The ERV wheel shall be in a horizontal position in the unit for vertical supply/return configuration units (62EB-EU). The ERV wheel shall be in a vertical position in the unit for horizontal supply/return configuration units (62E2-E7).
6. Pressure test ports shall be factory-installed on the outside of unit cabinet. They shall allow measurement of ERV wheel pressure drop on both the intake and exhaust sections to facilitate blower setup and air balancing.
7. Eye-bolts are provided to facilitate rigging.

C. Blowers:

1. 62E cabinets (all except 62EB,E7 units):

   Blowers shall be single-width, single-inlet backward inclined blades with direct-drive motors. Direct-drive motors shall be electronically commutated (EC) motors with built-in variable frequency drive. The blowers shall not use belts or pulleys.

2. 62EB,E7 cabinets only:

   Blowers shall be double-width, double-inlet type with forward-curved blades and direct-drive motors. Units shall have four-speed motors.

3. Blower wheel shall be made from steel with a corrosion resistant finish and shall be a dynamically balanced.
4. Blowers shall be mounted on neoprene vibration isolation pads.
5. Motors shall be high efficiency and have thermal overload protection.

D. Filter Section:

Standard filter section shall accept commercially available, 51 mm (2-in.) pleated filter(s).

E. Controls and Safeties:

1. The unit shall be microprocessor controlled.
2. The operator interface shall consist of a back-lit LCD (liquid crystal diode) screen, pushbutton and potentiometer. These are used to adjust airflows and control parameters and display operating airflows and alarms. No belts or pulleys are adjusted to set airflows.

F. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single location.

G. Energy Recovery Cassette:

1. Energy wheel performance shall be AHRI Standard 1060 certified and bear the AHRI certified product seal (U.S.A. Standard).
2. The energy recovery cassette shall be a UL recognized component for electrical and fire safety (U.S.A. Standard).
3. The wheel shall be coated with silica gel desiccant, permanently bonded without the use of binders or adhesives.
4. Coated wheels shall be washable with detergent or alkaline coil cleaner and water.

5. The silica gel shall not dissolve or deliquesce in the presence of water or high humidity.
6. The substrate shall be made of a lightweight polymer and shall not degrade or require additional coatings for application in coastal environments.
7. The wheel polymer layers shall be wound continuously with one flat and one structured layer in an ideal parallel plate geometry providing laminar flow and minimum pressure drop.
8. The polymer layers shall be captured in a stainless steel wheel frame or aluminum and stainless steel segment frames that provide a rigid and self-supporting matrix.
9. Energy recovery wheels greater than 483 mm (19 in.) in diameter shall be provided with removable wheel segments.
10. Wheel frame shall be a welded hub, spoke and rim assembly of stainless, plated, and or coated steel and shall be self supporting without the wheel segments in place.
11. Wheel segments shall be removable without the use of tools to facilitate maintenance and cleaning.
12. Wheel rim shall be continuous rolled stainless steel and the wheel shall be connected to the shaft by means of taper locks.
13. Wheel bearings shall provide an L-10 life of 400,000 hours.
14. Drive belts of stretch urethane shall be provided for wheel rim drive without the need for external tensioners or adjustment.

H. Special Features:
1. Sensible Energy Recovery Wheel:

   The energy recovery wheel shall only transfer sensible energy.
2. Mechanical Purge:

   An adjustable mechanical purge sector shall allow for a portion of the ventilation air to be redirected to the exhaust airstream in order to reduce the exhaust air transfer ratio.
3. EzERV Controls:

   Replaces standard pressure test ports with transducers for automated airflow control:
   a. Constant volume supply and exhaust with manual offset air control:

      Unit will control outside air volume to user specified airflow. Unit will control exhaust air volume to user specified differential airflow vs. outside air.
   b. Modulating supply with CO_2 control and exhaust air tracking with manual offset:

      Unit will control outside air volume to maintain a user-specified CO_2 level. Unit will control exhaust air volume to user-specified differential airflow vs. outside air. A CO_2 sensor is included with this option.
   c. Constant volume supply, modulating exhaust with building pressure control:

      Unit will control outside air volume to user-specified airflow. Unit will control exhaust air volume to maintain a user-specified building static pressure. A building static pressure sensor is included with this option.
   d. Modulating supply with CO_2 control, modulating exhaust with building pressure control:

      Unit will control outside air volume to maintain a user-specified CO_2 level. Unit will control exhaust air volume to maintain a user-specified building static pressure. A building static pressure sensor is included with this option.
4. Pre-Heater Option:

   Electric pre-heater is factory-installed on the outside air intake to the ERV. A static pressure sensor detects static increase on ERV wheel due to frost build-up. This activates the pre-heater if temperature is below its set point and static is detected across the ERV wheel.
5. Frost Protection Option:
   a. Factory-installed frost protection module shall sense pressure differential across the energy recovery cassette.
   b. Supply blower shall be shut off if the pressure differential across the energy recovery cassette exceeds an adjustable set point. Blower shall remain off for an adjustable time period.
   c. Exhaust blower and wheel shall remain in operation in order to remove any frost build-up on the wheel.
6. ERV Wheel Variable Frequency Drive Frost Protection:
   a. Factory-installed frost protection module shall sense pressure differential across the energy recovery cassette.
   b. The ERV wheel is temporarily slowed down to allow the wheel to be defrosted. Once the frost build-up is eliminated, the ERV wheel will return to normal operating speed.
   c. Supply and exhaust blowers shall remain in operation.
7. Low Temperature Lockout Option:

   A factory-installed lockout thermostat shall de-energize the ERV to prevent extremely cold outside air from entering the space. Lock-out set point shall be field-adjustable from –34.4 C to 37.8 C (–30 F to 100 F).

Guide specifications (cont)

8. Fused Disconnect Switch Option:

   NEMA 3R (U.S.A. Standard) fused disconnect switch shall be factory installed. Disconnect shall be sized to handle the ERV unit and pre-heaters (when factory-installed). Fuses shall be included.

9. Non-Fused Disconnect Switch Option:

   NEMA 3R (U.S.A. Standard) non-fused disconnect switch shall be factory-installed. Disconnect shall be sized to handle the ERV unit and pre-heaters (when factory-installed).

10. Filter Maintenance Indicator:

    Pressure drop across the outside air and exhaust air filters is monitored. When a high static due to dirty filters is detected, the ERV LCD displays the alarm and a dry contact is activated. It shall not interrupt ERV operation. Switch set point shall be adjustable.

11. ERV Wheel and Blower Maintenance Indicators:

    The outside air and exhaust air blower/motors, and ERV wheel, are monitored for proper operation. If a problem is detected, the ERV LCD displays the alarm and a dry contact is activated.

12. Motorized Supply Damper Option:

    The supply damper shall be motorized with factory-installed, 2-position, 24-volt motor. Damper shall close when the ERV is off.

13. Motorized Exhaust Damper Option:

    The exhaust damper shall be motorized with factory-installed, 2-position, 24-volt motor. Damper shall close when the ERV is off.

14. Rooftop Economizer Option with Power Relief:

    When used in conjunction with the rooftop unit's economizer, the ERV outside air blower will be turned off, the ERV exhaust blower will be kept on, and the ERV wheel will be energized periodically to prevent contamination build up on the ERV wheel during the "free-cooling" operation of the rooftop unit.

15. Rooftop Economizer Option, Shutdown ERV:

    When used in conjunction with the rooftop unit's economizer, the ERV will be completely shut down during the "free-cooling" operation of the rooftop unit.

16. Remote Timer Accessory:

    During planned occupancy periods, the remote timer accessory shall allow the unit to be activated.

17. Remote Readout Accessory:

    Remote readout allows for remote display of ERV operating status and alarms.

18. Roof Curb Accessory:

    Roof curb shall be formed of 14-gage galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.

19. Combination Energy Recovery Ventilator - Rooftop Unit (ERV-RTU) Roof Curb Accessory:

    The ERV-RTU curb shall be fully assembled to support both the rooftop unit and ERV. Curb assembly shall contain internal transitions between the ERV supply and exhaust connection and the return air path to the RTU. No external connection shall be required. Curb shall contain barometric dampers to allow self-adjusting variable airflow between the exhaust and return air paths. Curb assembly shall allow use of rooftop unit's standard economizer and power exhaust components.

20. Drop-In Damper Box Accessory:

    Drop-in damper box shall contain barometric dampers to allow self-adjusting variable airflow between the exhaust and return air paths. Damper box shall fit into the rooftop unit's standard roof curb return opening. Damper box shall have duct connections for exhaust air to ERV and supply air from ERV. The drop-in damper box allows for the ERV to be positioned independently from the RTU location with up to 30.5 m (100 ft) equivalent duct per run between the ERV roof curb and RTU damper box.

21. Horizontal Supply/Return ERV Base Accessory:

    The horizontal ERV base transitions the unit's bottom supply and exhaust openings to horizontal connections.

22. Horizontal ERV-to-RTU Transition Accessory:

    The horizontal transition accessory is designed to fit between the ERV horizontal base and the RTU's horizontal return connection. Transitions are shipped fully assembled and are constructed of pre-painted steel to match the finish of the HVAC unit and the ERV unit. The 25 mm (1 in.), 2-lb insulation is factory-installed.

23. Post-Heater:

    Electric post-heater shall be factory-installed on the outside air discharge from the ERV.

24. Three-Stage Electric Pre-Heater Control:

    Electric pre-heater shall have 3 stages of capacity control.

25. Three-Stage Electric Post-Heater Control:

    Electric post-heater shall have 3 stages of capacity control.

26. BACnet Communication Interface Option:

    A controller based module shall provide ERV communication access via BACnet Master-Slave/Twisted-Pair (MS/TP), MODBUS Remote Terminal Unit (RTU) or Johnson N2 protocols. The protocol choice is field selectable with no additional programming.

27. LON Communication Interface Option:

    A controller based module shall provide ERV communication access via LON FT-10A ANSI/EIA-709 protocol.

28. *Comfort*Link™ Interface Device:

    Shall provide a control interface through the LEN (local equipment network) between the 62E unit and a Carrier rooftop unit using the *Comfort*Link DDC (direct digital controls) control system. This interface shall provide optimal system operation by sharing unit data and properly coordinating energy recovery, economizer, and power exhaust operation.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.